An assessment with behavioral observation for social competence in Chinese university students

論文題目

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（中国大学生における社会能力の行動観察評価）

２０１４

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論　文　概　要

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Background: In China, Social competence has attracted researchers' attention since the 1990s. Social interactions can lead to positive mental health status but also cause negative results when social skills are not effective to achieve successful interactions. It is important that individuals can acquire, develop, and maintain appropriate social skills across their life spans. Some worldwide researchers reported that a three-domain construct consisting of assertion, coordination, and self-control was suitable to explain social competence. However, previous studies on social competence have not discussed about assessments with behavioral observation as well as constructs of social competence in Chinese university students.

Purpose: This study aimed to provide an assessment for behavioral observations of social competence in Chinese university students and examine if the three-domain construct (coordination, self-control, and assertion) was suitable for this population.

Methods: 58 university students were recruited and a game was applied to create the interactional behaviors among them. Interaction Rating Scale Advanced (IRSA) was verified if it can be used to assess social competence in Chinese university students by observing their interactional behaviors. Their interactional behaviors were evaluated with IRSA. The distribution of interactional behaviors was assessed to reduce the number of items of the IRSA. The Exploratory Factor Analysis (EFA) was applied to reveal applicable items in IRSA and examine if the three-subscale construct was suitable for Chinese university students. The Chinese versions of Social Skills Inventory (SSI), ENDCOREs and Autism-Spectrum Quotient (AQ) were

introduced to examine the convergent validity of items in IRSA.

Results: The result of descriptive statistics indicated that 40 of 92 items in IRSA were applicable to assess interactional behaviors in Chinese university students. With EFA, the number of the IRSA was reduced from 40 to 28 items. The IRSA-28 modified for Chinese university students explained 80% of the total variance. Besides the three factors including assertion, coordination, and self-control, the fourth factor "sensitivity" was extracted. The internal consistency was supported by Cronbach's alpha in all factors (α=.97). Convergent validity was supported with the correlations of IRSA-28 with SSI (r=.45), ENDCOREs (r=.57), and AQ (r=-.42).

Conclusion: IRSA-28 with a four-factor structure and 28 items has acceptable reliability and validity, indicating that IRSA has the potential to assess social competence in Chinese university students. The fourth factor, sensitivity, may be essential for assessing social competence in China, as well as the other three factors, assertion," coordination, and self-control. The four-factor structure support that the three-domain was suitable for Chinese university students. However, the items and constructs of IRSA-28 should be modified through further studies to provide a complete perspective on social competence in China.

Tables of Contents

Paper for reference

Appendices

Chapter 1 Overview

1.1 Introduction

1.1.1 Development of research on social competence

Research into social competence has increased rapidly since the 1960s. During this time, researchers began to identify problems appearing in social behavior, emotional adjustment, and social functioning as the construct of social competence. In the beginning, social competence was not well understood, and was considered essentially synonymous with general competence or a capability for overt behavioral responses (Goldfried & D'Zurilla, 1969). Goldfried and D'Zurilla (1969) defined social competence as effectiveness or adequacy of individual's capability to handle the problematic situations faced him/her. From this perspective, social competence was considered in terms of general behavioral responding in situations, and did not reflect specific abilities involving cognitive, emotional, and behavioral skills.

However, with the rise of social learning perspectives, the emphasis in conceptualizations of social competence shifted from overt behavior to the combinational sets included cognitive, emotional, and behavioral skills and abilities. This shift in conceptualizations highlighted the key perspective that the behaviors related to social competence are learned and influenced

by antecedents and consequences in environments (Nangle, Erdley, Adrian, & Fales, 2010). Albert Bandura's social learning theory proposed that people can learn new behaviors by observing others in their environments; however, the recognition of self-directing capacities also determine if individuals can acquire new behaviors (Bandura, 1977). According to this theory, individuals' behaviors rely upon external stimuli in interactions, internal cognitive and regulatory processes, and reinforcing feedback (Maisto, Carey & Bradizza, 1999). Based on social learning theory, social competence can be recognized as a series of skills that can be acquired and maintained through interactions between individuals and their environments. Through multiple interactions, social skills that result in positive consequences are more likely to be repeated, and thus are mastered to be part of an individual's personal competence. In contrast, those skills that results in negative consequences are less likely to be repeated (Kelly, 1982).In addition to how social competence is acquired and maintained, previous research has also focused on its importance. Social competence has been found to be associated with successful school adaptation and positive teacher and peer-relationships (Howes, 2000; Ladd, 1999; Pianta & Niemitz, 1991). In contrast, children who were rejected by their peers had more risk to develop behavioral problems in their periods of childhood and adolescence (Coie, Christopoulos, Terry, Dodge & Lochman, 1989). Moreover, they were more likely to experience loneliness, poor school

adjustment and mental health problems in adults (Cowen, Pederson, Babigian, Izzo & Trost, 1973; Ladd & Asher, 1985; Parker & Asher, 1987). In addition, children who had conduct problems were more likely to have poor academic achievement in school (Howes, 2000; Jimerson, Egeland, Sroufe & Carlson, 2000). Across the life span, problems in social relationships contribute to adjustment difficulties and clinical disorders. Research among adults has shown that individuals with poor social skills had more unsatisfactory and unsuccessful experience in their romantic relationships and marriages (Burleson, 1995; Kelly, Fincham & Beach, 2003). Research on the elderly has also implicated the importance of social competence. For example, the elderly who had poor social interaction and infrequent participation were at higher risk in cognitive decline as aging (Zunzunegui, Alvarado, Del Ser & Otero, 2003).

Given the negative effects of poor social interactions, many studies have aimed to improve key social skills among individuals. Researchers have identified that individuals could display deficits of social skills in any developmental periods; moreover, since the negative cycle of deficits prevents acquisition of social skills, the deficits were not probably to improve spontaneously (Kelly, 1982). Social learning theory suggests that social skills are acquired and maintained through interactions between individuals and the environment. However, individuals with impaired social skills are initially reluctant to interact with other people and easily

experience negative consequences. In turn, these unsuccessful interactions and negative consequences could reinforce impaired skills and refuse to acquire new skills (Hansen, Giacoletti & Nangle, 1995; Kelly, 1982).

Social skills training (SST) was introduced to address the negative cycle of social skills deficits. SST is a therapeutic intervention to address a wide variety of interactional skills and deficit basing on application of social learning theory. As primary interventions or one part of combined treatments, SST has been proven to be an effective intervention in clinical populations (Smith, Jordan, Flood, & Hansen, 2010), such as in individuals with autism (Plienis et al., 1987), schizophrenia (Dilk & Bond, 1996), and communication difficulties (Godfrey, Pring & Gascoigne, 2005).

1.1.2 Definitions

A precise definition of social competence is necessary for the identification and application of critical skills in assessment and intervention. Currently, however, there is no agreement on a definition of social competence (Nangle, Grover, Holleb, Cassano & Fales, 2010). Previous studies have proposed different definitions such as “the attainment of relevant social goals in specified social contexts, using appropriate means and resulting in positive developmental outcomes” (Ford, 1982, p.323); “evaluative term based on judgments that a person has performed adequately” (Gresham, 1986, p.145); “the formulation and adoption of

personal goals that are appropriate and adaptive to specific social situations and implementing effective behavior strategies for achieving goals" (Taylor & Asher, 1984, p.57); and "the ability to achieve personal goals in a social interaction while maintaining positive relationships with others overtime and across situations" (Rubin & Rose-Krasnor, 1992, p.285). Definitions of social competence number more than those mentioned.

Although the definitions of social competence are numerous, a review and comparison of these definitions yields an outline of their common elements. Nangle and his colleagues advocated three points for the definition of social competence as the notion of effectiveness, focus of interest on behaviors, and effectiveness defined with in social context (Nangle et al, 2010). These three points provide an important context for considering the different definitions of social competence. Social competence of individuals could be deemed as the ability to express oneself or respond to others (in social interactions) with behaviors that are appropriate to the social context, and thereby achieve successful social relationships.

Another issue of note is the difference between social competence and social skills. Nangle and his colleagues pointed out that the term of social skills usually refers to the specific abilities or behaviors which were considered as effective responses in social tasks. Another hand, the term of social competence typically refers to evaluative judgments of outside

observers for adequacy of performance in social tasks. Usually, social skills are the molecular responses in socially competent performance, while social competence tends to describe a general trait-like ability (Nangle et al, 2010). Therefore, one's degree of social competence probably can be inferred but not observed directly. On the other hand, social skills can be measured based on behavioral evaluation, but the problem that how to combine these behaviors to build meaningful units of analysis should be considered carefully, because as smaller and simpler units of analysis are employed to describe behaviors in social interaction, probably the reality of interactional capability is harder to be reflected by the units of analysis (Nangle et al, 2010). Although social competence and social skills may generally reflect the same interactional capability of an individual, the two terms should be considered separately according to the specific research situation.

1.1.3 Assessments

In order to reflect an individual's social competence objectively, quantitative and precise information about an individual's social functioning needs to be obtained. At present, information regarding social competence can be collected from parents, teachers, peers, outside observers, and individuals themselves, and there are different advantages and disadvantages for each type of information source.

Parents can assess their children across many contexts and through extended periods, but their emotional attachment to their children may affect their evaluations (Schneider & Byrne, 1989). Teachers can observe interactions among children at school and are able to evaluate behaviors of children with better norms based on particular age of children (Pakaslahti & Keltikangas-Jarvinen, 2000). However, the amount of time which teachers spend with children in school is limited and they may be influenced by children's behaviors in classroom (Bierman, 2004). Peers can observe diverse behaviors though many settings (not limited to school or home), and can understand the behaviors from the perspective of someone in the same age. However, the capability is necessary that if the peers can understand some refined behaviors, such as socially withdrawn behaviors (Younger, Schwartzman & Ledingham, 1986). In addition, it is also probably that parents and school staffs may be hesitant to have children assess their peers or be assessed (Pakaslahti & Keltikangas-Jarvinen, 2000).

Although outside observers have no emotional attachment to observed individuals, and are not at risk of being influenced by reputation from the environment; however, they maybe have no complete perspective of an individual's social functioning because the behaviors related to social competence may be not observed completely in the period of observation (Bierman, 2004); In addition, individuals can provide complete access to their emotions and perspectives on behaviors through self-report measures,

but may also magnify their positive behaviors and minimize negative behaviors (Junttila, Voeten, Kaukiainen & Vauras, 2006). Since advantages and disadvantages exist for all methods of collecting information, multiple measures that evaluate individuals objectively from different perspectives are optimal (Erdley, Nangle, Burns, Holleb & Kaye, 2010).

Given that multiple measures are optimal, the following issues are raised in terms of the purposes of assessing and appropriate assessments. Erdley et al. (2010) summarized the three main goals of assessing social competence after reviewing previous studies. The first goal was to identify target groups that need intervention because of deficits of social skills or behavioral disorders. The second goal was to determine the specific social skills and the particular problematic social situations. Then, evaluating effectiveness of intervention was the third goal. In addition to these goals of assessment, previous studies have demonstrated that social competence should be measured with varied approaches in different developmental periods, because many developmental factors, such as cognitive capabilities, particular behaviors at different ages, dramatic changes in social context and complexity of peer relationships can affect individuals' social behaviors (Bierman & Montminy, 1993; Brown & Klute, 2003). These studies implied that appropriate assessments for social competence should be aimed at particular target groups and specify the representative behaviors of the target groups. Furthermore, the assessments should

quantify behaviors so that the objectivity of the assessment can be assured and changes due to the intervention measurable.

1.1.4 Interventions

Based on social learning theory, social skills are not only learned from one's environment, but can also be acquired through interventions that target an assortment of skills and address a range of deficits. Furthermore, the acquisition and performance of social skills has also been distinguished. Acquisition implies that a particular skill is acquired through a learning process, whereas performance means that a learned skill is represented under specific conditions (Merrell & Gimpel, 1998). Deficits in social skills involve the failure to acquire some skills or an incompetency to demonstrate the learned skills appropriately (Elliott, Gresham & Heffer, 1987). Therefore, social skills interventions should aim to solve problems in both acquisition and performance.

Previous study have suggested that some core therapeutic techniques, including instruction, modeling, rehearsal, feedback, and reinforcement, should be introduced to integrate main systematic process of social skills training (Smith et al, 2010). As pointed by the researches of Smith and his colleagues, instruction with clearly defining and examples of targeted behavioral components helps individuals to understand the functions of the behaviors and benefit from using them. Then, modeling (such as in

vivo/live or videotaped) shows individuals appropriate representations of targeted behaviors and helps them recognize the potential positive outcomes resulting from effective utilization. Moreover, rehearsal allows individuals to practice targeted behaviors with taking an active role in the process of skills acquisition. Feedback was suggested as the most effective approach for understanding positive outcomes of performance according to provide individuals with the results comparing to standards of behaviors. At last, reinforcement is introduced to strengthen new behaviors and skills by presenting or removing the stimuli that lead to perform these behaviors and skills. A systematic process provides clear steps for applying a social skills intervention. Moreover, it emphasizes how to introduce targeted social skills behaviors, how to examine if the behaviors are acquired and performed, and if the representation of targeted behaviors can reflect improvements in social skills deficits.

Another issue in social skills training is the duration of the intervention. Previous studies have suggested that the duration of intervention should be based on whether the representation of new skills has become generalized. Generalization of new skills means that the targeted skills can be maintained for a length of time and strategies of interventions should be actively formulated for it, given it is critical to determine if an intervention is complete because the objective of social skills training is to improve an individual's ability to function in social contexts (Smith et al, 2010).

Generalization indicated that it is important that targeted behaviors can be observed quantitatively under multiple similar conditions.

Given that the effectiveness of an intervention of targeted behaviors cannot be determined solely by those implementing treatments, social validity was proposed as a crucial standard to determine if a social skills intervention was successful. Social validity allows the targeted behaviors are involved to individuals' social environments and are acceptable by their societies (Smith et al, 2010). The importance of social validation in social skills interventions implies that objective criteria for social validity should be established based on individuals' social contexts, rather than assumptions made by those implementing interventions.

1.1.5 Factors of social competence

Factors of social competence have been a global topic of discussion for years. For example, Gresham and Elliot (1990) proposed five factors of social skills including "cooperation," "empathy," "assertion," "self-control," and "responsibility." Caldarella and Merrell (1997) described the dimensions of social skills with "peer relations," "compliance," "self-management," "assertion," and "academic". Elikskin LK and Elikskin N (1998) also suggested five key points to process of intervention for students with learning and behavior problems, such as "interpersonal," "teacher-pleasing," "self-related communication," and "assertiveness."

Additionally, Kolb and Hanley-Maxwell (2003) listed the critical basic social capability, including "peer/group interaction," "problem solving/decision-making," "self-management," "communication," and "assertiveness" in adolescents with a high incidence of disabilities. These constructs of social skills contained the common domains of "empathy/coordination," "self-control," and "assertion." These three domains were shown to be stable over early child development from one to six years of age among Japanese children in a longitudinal study (Anme, 2008). Moreover, they also have been proven necessary domains to assess social competence of adults in Japan (Anme et al, 2011).

1.2 Problems related to social competence among Chinese university students

According to the data of Ministry of Education of China, young adults aged from 18 to 22 years old could more easily access higher education in universities and colleges than before, as the gross enrolment rate of education of higher education has increased from 5.0% to 34.5% among them in the past two decades (Ministry of Education of China, 2013); meanwhile, with the innovation of high education in the past 10 years, the population attained university and college education have reached 1.2 hundred million in China (National Bureau of Statistic of the RPC, 2011). As more and more young adults have opportunities to study in university

and colleges, many studies have focused on social, mental, and behavioral problems in Chinese university students. Although these studies focused on university students with different objectives, they showed many notable phenomena related to university students' interactional capability in fields of mental health, behavioral development and socialization. These notable phenomena imply that the issue of interactional capability of university students should be paid more attention in the current social background that major young adults will experience high education as university students in China.

1.2.1 Prevalence of mental and behavioral disorders in university students

Previous studies focused on the mental health status of university students have shown that the prevalence of mild mental problems was 10.1% (Qin, 2009) and the rate of psychological disorders was 19%. Additionally, the detection rate for obsessive-compulsive symptoms was highest (4.54%), followed by interpersonal sensitivity (2.94%), depression (2.74%), hostility (2.54%), and paranoia (1.73%), among the major psychological problems (Cao, 2010). Other research has shown that psychological problems affect the academic achievement of college students. For instance, 0.6% of students could not complete their studies because of severe psychological disorders, and 6%-7% of students needed

interventions to help them graduate from college (Liu, 2005). In particular, as the Internet and mobile devices became widespread in daily living, many university students began to present characteristics of Internet addiction. Many studies have demonstrated that Internet addiction has a negative effect on individuals' mental health, academic achievement, and social lives, particularly for youths (Kandell, 1998; Morahan-Martin & Schumacher, 2000; Young, 1997). Studies focused on Internet addiction have demonstrated that 9.6%-12.9% of university students have Internet addictions in cities, and there was a high rate of Internet addiction among Chinese university students compared to students worldwide (Chen, Huang & Bai, 2003; Gu, 2007). Thus, mental health issues and behavioral disorders have been increasing among university students, given that the promotion rate of senior secondary school graduates has increased in the last two decades.

1.2.2 Loneliness: A severe social problem requires intervention and support for social interaction

The period of university is a transitional phase for youths, when they learn to study and live as social beings. While youths desire more social and emotional interaction with others during this period, the reality is not optimistic. As mental health issues and behavioral disorders increase, loneliness is spreading among university students. A previous study found

that 14.7% of college students usually felt lonely and there was no significant difference between male and female students (Luo, Ruan, Lou Cheng, Fang, Zhu, 1999). A study implemented among medical students also demonstrated that 50.8% of medical students experienced loneliness and 51.4% of them had the trait of loneliness (Dai, Tan, Dai & Zhong, 2011). A further study focused on feelings of loneliness found that rates of emotional isolation and social isolation were 35.7% and 18.4% in university students; moreover, 10.9% and 8.9% of them were experiencing severe emotional isolation and social isolation (beyond common feelings of loneliness), respectively. In addition, individuals who had fewer interactional skills tended to identify themselves as isolated (Li Xiu-Hong et al., 2010). Given the unoptimistic situation, researchers suggested that effective interventions improved students' skills to solve interactional problems and acquire social support (Chen & Shi, 2008; Tang, 2007).

1.2.3 The effect of social interaction on university students

On the other hand, studies focused on behavior and related factors for university students have revealed behavioral problems that occur in students' environments. One previous study found that students from low-income families were more agitated, nervous, and sensitive in social interactions and tended to spend time alone (Kong & Zhang, 2005). Furthermore, college students whose parents were divorced showed more

maladjustment and oppositional behaviors in social interactions because of feelings of discouragement and lower self-esteem (Zou Bing, Xiei & Zou Juan, 2010). In addition, when university students began job searching and entering the working world, students who were more capable in social interactions showed greater confidence, and thus had a greater probability of finding suitable careers (Li Li, Li Lan-Fang & Li Xiao-Ru, 2007). Moreover, a previous study of social anxiety pointed out that Chinese students, especially university students, were suffering from the social anxiety. It pointed out that although this phenomenon of social anxiety was more prevalent in university students, the problems related to social anxiety had existed in high school. Intense pressure from schoolwork in high school could cover problems related to social anxiety, but this issue would be complicated in university as students try to extend their social circle (Guo, 2000). In addition, a previous study documented that social avoidance and distress experienced by university students could be affected by environmental factors, such as grades, allowance, education level of parents, and negative life events (Dai Jing-Fang, et al., 2011), and that one of the causes of social anxiety was inadequate ability to manage social interactions (Guo, 2000).

1.2.4 Lack of social interaction skills among university students

Since capability for social interactions predicted students' daily life,

academic achievements, and future careers, this skill was considered an important issue in terms of students' development in university. Studies have demonstrated that interpersonal interactions have become the main cause of stress in campus life (Yang, Zhang & Zeng, 2006), and that 40% of psychological problems were related to maladjustment of interpersonal interactions (Zhang, Liu & Jin, 2003). Results from a study that examined interpersonal interactions among university students revealed that 28.4% and 65.9% of students chose contact via the Internet and face-to-face contact as their first and second choices for interacting with others, respectively. Moreover, when asked about their interaction skills, 41.8% students felt that they lacked assertiveness skills, and 28.9% of them did not feel they had adequate skills to control their emotions when interacting with others (Liang, 2010). These results indicate that many university students avoid using direct ways to interact with others because of inadequate social skills.

1.3 Hypothesis

Social competence has been proven to be an essential skill for living in society. As previously discussed, definitions of social competence are diverse but have common elements. Moreover, evaluations of social competence should involve multiple measures. In addition, assessments should be effective in quantifying social competence, so that these

assessments can be used to indicate interventions for individuals who have deficiencies in social interaction. Finally, when research on social competence in Chinese university students is conducted, the questions that follow should be considered.

First, what have been the precise definitions of social competence among previous studies in China, and have there been differences and common elements in these definitions, as has been found globally? Second, what kinds of assessments have been developed for adults and university students and have effective interventions been implemented for individuals with deficiencies in social interactions? Finally, the third question is whether the three stable and global factors of social competence ("coordination," "self-control," and "assertion") are suitable to measure social competence in Chinese university students.

1.4 Objectives

To clarify the hypotheses, this study is designed in two parts.

Part 1 aims to understand studies focused on the social competence of adults and university students based on a collection of primary data sources in China. The results of Part 1 are expected to provide a complete perspective on the social competence of university students in China, including definitions, assessments, and interventions, and thus will inform Part 2.

Part 2 aims to verify a practical assessment of social competence, thus enabling multiple measures for Chinese university students. Moreover, Part 2 also examines whether the three domains of the construct of social competence, including assertion, coordination, and self-control, are suitable to measure social competence in Chinese university students.

Chapter 2 A review of social competence of adults and university students in China (Part1)

2.1 Introduction

Social competence has attracted researchers' attention since the 1990s in China, with most studies initially focusing on social competence in children. Previous studies have demonstrated that 4.4% of preschool children appeared to have low social competence in a random sampling (Shi Shu-Hua et al., 1999), and children living in urban areas showed better social competence than children living in rural areas (Yao, 2001). Furthermore, associations between family socioeconomic status and children's social competence in early childhood have been investigated. Zhang Xiao et al. indicated that low family income was not only disadvantageous for relationships between children and their peers, but also could affect their ability to build a good relationship with their teachers. Additionally, family culture and family emotions are also important factors predicting children's social competence, in combination with family income. For example, high income parents may pursue more social resources for their children to provide opportunities to develop social competence, whereas children brought up in families with lower income and more conflict may lack social competence (Zhang Xiao, Chen, Zhang Yin-Na & Sun, 2009). Furthermore, a latent growth model of social

competence during early childhood indicated that the girl's initial levels of social competence were higher than boys' and children's social competence was affected by their mothers' education level as higher education of mothers contribute positively to children's social competence; moreover, the interactive effect between temperamental rhythmicity and gender was an important predictor to development of social competence in children (Zhang Xiao, 2011). In addition, the effect of meta-emotion philosophy of parents on children's social competence was also examined. Liang, Zhang Guang-zhen, Chen and Zhang Ping (2012) found that parents' emotion instruction and emotional expressivity promoted children's social competence but their dysfunction of emotion were harmful to development of social competence; especially, father's emotional expressivity can directly affect children's social competence. Furthermore, childhood abuse, such as physical abuse, emotional abuse, neglect, and sexual abuse, were demonstrated as sever risk factor to children's social behaviors (Wei, Zhu, Li, Yang & Tian, 2007).

Adolescence is a period during which individuals experience significant physical, cognitive, emotional, and social changes. The importance of social competence in promoting adolescents' positive development has been established. For example, social competence is essential to enable adolescent individuals to display competent interactional behaviors in varied social environments (Walters & Sroufe, 1983). In addition, social

competence is protective toward them against risk factors in adolescent period in which individuals are sensitive and vulnerable to antisocial behaviors, such as drug abuse and depression (Botvin & Griffin, 2002; Epstein, Griffin & Botvin, 2000). Furthermore, with respect to college students, individuals who had poor social competence also usually were more vulnerable to the development of psychosocial problems (Segrin & Flora, 2000).

With respect to the culture of China, previous studies have proposed that social competence is correlated with individuals' functioning. For example, individuals who have better social competence can obtain more social support to help them achieve success during their studies and in a career; meanwhile, social competence enables individuals to acquire necessary skills for improving efficiency of work, and may lead to better physical and mental health (Qin & Huang, 2001). Furthermore, educational experts suggest that a definition and training program for social competence should be introduced into the education system of China, and that it is important to explore students' social competence, to solve problems emerging from the current diathesis education (Wang & Yu, 2006).

2.2 Objective

Part 1 aimed to review previous studies of social competence focused on adults and university students through a collection of primary data

sources in China. Part 1 summarized the definitions of social competence proposed in previous studies, assessments developed to measure social competence in adults and university students, and interventions for individuals with deficiencies in social interactions.

2.3 Methods

To identify research on social competence appropriate for this review, papers published from 1980 to 2013 were searched from main databases in China, including the China Knowledge Resource Integrated Database (CNKI), China Science and Technology Journal Database (CSTJ), and Wanfang Data Knowledge Service Platform (Wanfang). The keywords used were social competence, social skills, assessment, adult, and university student.

Before searching databases in China, studies focused on social competence of Chinese adult and university students were searched in global databases, with keywords such as social competence, social skills, adult, and university students; however, there were few results, so the searching were reverted to the Chinese databases.

The lack of results from global searches may be explained in a few ways. First, research focused on adult social competence in China has appeared late, in comparison to global research. Research results from databases in

China also support this explanation since all the studies of social competence related to assessments and interventions are published after 2000. Furthermore, some studies from China were written in Chinese and did not have English titles or abstracts. This is another reason why we could not find Chinese research in global databases.

Given that searching in global databases did not provide expected results, previous studies were collected from the primary and largest databases in China, including China Knowledge Resource Integrated Database (CNKI), China Science and Technology Journal Database (CSTJ), and Wanfang Data Knowledge Service Platform (Wanfang). These are leading databases utilized by libraries, research organizations, and universities in China. These entire databases can be accessed online using searching engines.

Studies were selected that focused on proposing definitions, developing assessments, introducing social skills training to treat patients, and exploring educational programs of social competence for university students.

With regard to the obtained studies, the following topics were discussed. First, whether there were differences and common elements in definitions of social competence proposed in China. Second, whether the current assessments were appropriate and sufficient to measure social competence in university students. Third, whether social competence interventions were effective for individuals who had deficiencies in social interactions.

2.4 Results

Using the criterion of a focus on definitions, assessments, and interventions for adults and university students, 21 studies were selected. Six studies developed assessments, 8 studies introduced interventions (including 5 studies that introduced social skills training interventions to patients with schizophrenia, and 3 studies proposed social competence lessons for university students). In addition, 7 studies were also summarized that did not focus on assessment or intervention, but included a definition of social competence.

2.4.1 Definitions

In addition to the 7 studies that proposed definitions, 4studies that developed assessments and 2 studies that proposed social competence lessons to university students also defined social competence. Therefore, 13 studies proposed definitions of social competence, and all are presented in Table 1.

2.4.2 Assessments

All assessments developed for adult and university students in the 5 previous studies are listed in Table 2, and are categorized by the sources of information, including self-report, other-evaluation, and clinical interview.

2.4.2.1 Self-report assessment

Social skills inventory (SSI)

The Social Skills Inventory (SSI), explored by Riggio (1986), is a self-report inventory for assessing basic social skills related to overall social competence. SSI evaluates verbal and non-verbal communication skills and identifies strengths and weaknesses of each among six subscales including "emotional expressivity (EE)," "emotional sensitivity (ES)," "emotional control (EC)," "social expressivity (SE)," "social sensitivity (SS),"and "social control (SC)." Cao, Huang, Cheng and Jiang (2009) explored the reliability and validity of SSI in a sample of 542 university students who completed the assessment; 40 students were randomly chosen for a second administration two weeks later. The results indicated that in the sample of Chinese university students, Cronbach's alpha coefficient of SSI was .81, the test-retest reliability coefficient was .75, the Spearman-Brown's split-half reliability was .84, the correlation coefficients of the six factors (EE, ES, EC, SE, SS, and SC) with the total score were .305-.802, and the indices of the confirmatory factor analysis were as follows: χ^2/df = 2.2, GFI = .888, CFI = .903, IFI = .916, RMSEA = .076.

With respect to Chinese university students, the results indicate that (1) the internal consistency of SSI is good and the reliability of SSI was demonstrated; (2) the correlation coefficients of the six subscales (EE, ES, EC, SE, SS, and SC) with the total score implied that the validity of SSI is

acceptable; and (3) the indices of the confirmatory factor analysis showed that a six-factor model of SSI is suitable for this population.

Social Skills Scale (SSS)

The Social Skills Scale (SSS) is an assessment for social skills in Chinese university students explored by Zhuang, Gan and Liu (2004). SSS was developed using Baron and Markman's questionnaire (Baron & Markman , 2003), which consists of 30 items designed to assess proficiency with respect to social skills. Zhuang et al. revised the Social Skills Scale, examined its psychometric properties, and examined the relationship between SSS and mental health in Chinese university students.

A sample of 394 freshmen completed SSS, the Symptom Checklist-90-R (SCL-90, Derogatis, 1975), and the Self Consistency and Congruence Scale (SCCS, Wang Deng-Hui, 1994), to examine the validity of SSS (Zhuang et al, 2004). In Baron and Markman's (2003) study, the 30 questionnaire items were classified into four factors: social perception, social adaptation, social expression, and impression management. Zhuang et al. (2004) retained 27 items within these factors and extracted a fifth factor, social confidence. Their results showed that the internal consistency coefficients ranged from .52 to .77, the correlations between items of each factor and the corresponding factor ranged from .46 to .76, and the index of discrimination of factors ranged from .32 to .52, thus indicating that the

revised SSS had acceptable reliability. Moreover, examination of the correlation coefficients with the SCL-90 and SCCS revealed that only the correlation for social expression was not significant, thus demonstrating that the revised SSS had acceptable validity. Therefore, Zhuang et al. suggested that the revised Social Skills Scale could be utilized to assess social skills of university students, and required further improvements.

Social Competence Questionnaire for Undergraduate Students (SCQUS)

The Social Competence Questionnaire for Undergraduate Students (SCQUS) was developed to contain three subscales according to the three aspects of social competence of undergraduate students (Liu Yan & Zou Hong, 2005). The researchers analyzed the major developmental tasks during the undergraduate study period and proposed three aspects of social competence: (1) the ability to solve social problems, which consisted of four factors, including social involvement, self-support and confidence, flexibility, and decisiveness; (2) the ability to acquire general social acceptance, which consisted of five factors, including interest in social interaction, independence, tolerance and gentleness, non-egotism, and admitting to other's merit; and (3) the ability to develop friendships, which consisted of five factors including belief in friendships, respecting disparity, loyalty and acceptance, admiration and support, and emotional expression and communication. Based on these three aspects, they explored a series of

items to assess social competence of undergraduate students.

First, the researchers implemented an exploratory investigation among 30 undergraduate students, to assess how the three aspects might be represented in terms of psychological traits and behaviors, and in which types of circumstances the three aspects might emerge. Based on this investigation and in reference to previous studies, the researchers organized the original items into the three aspects: 52 items about the ability to solve social problems, 62 items about the ability to acquire general social acceptance, and 62 items about the ability to develop friendships. Second, a sample of 145 undergraduate students completed the original items, and the results of an exploratory factor analysis allowed the researchers to group items into the three factors (29 items in Factor 1, 33 items in Factor 2, and 31 items in Factor 3). Third, confirmatory analysis was used to examine the reliability of each factor of SUQUS. Cronbach's alpha coefficients of all factors ranged from .595 to .809, demonstrating that the SUQUS had acceptable reliability. Fourth, a problem-solving evaluation, peer-acceptance evaluation, and quality of friendship evaluation were introduced to examine the validity of each factor of the SUQUS, respectively. Students were classified into three groups from high to low based on their scores on the problem-solving and peer-acceptance evaluations. An analysis of variance was conducted with group as the independent variable and scores on Factors 1 and 2 as the dependent

variables. The main effect of group was significant for Factor 1, F (8, 186) = 4. 37 (p < .001), and Factor 2, F (10, 216) = 4.84 (p < .001).The correlation between the quality of friendship evaluation and Factor 3 also was examined and the results ranged from .209 to .557. Based on these results, the validity of the SUQUS was demonstrated. It was suggested that the three factors of the SUQUS were suitable for assessing the social competence of undergraduate students, and that the three-factor structure might be applicable to other groups of different ages with further study.

Chinese University Students Social Skills Inventory (ChUSSI)

The Chinese University Students Social Skills Inventory (ChUSSI) is a native social skills inventory for Chinese university students (Mao & Daibo, 2006). ChUSSI contains 41 items, and consists of four factors named Partner's "Mianzi" (PM, "Mianzi" is a Chinese term that means dignity depends on one's reputation with others), Sociability (SA), Altruistic Behavior (AB), and Connection Orientation (CO).

First, the researchers implemented an investigation of 56 Chinese students who were studying in Japan and 66 Japanese students who were studying in China, to find out the Chinese students' traits represented by their interactional behaviors, and the problems and differences between China and Japan. Based on the results of that investigation, they chose 92 items for the original questionnaire. Second, they recruited 604 Chinese

university students to complete a survey with the original items, and obtained data for 593 students. After exploratory factor analysis, 41 items were retained and classified into four factors (PM, SA, AB, and CO), and Cronbach's alpha coefficients of ChUSSI were shown to range from .70 to .89. Subsequently, 145 students were surveyed 8 weeks later, and the test-retest reliability coefficients were shown to range from .64 to .71 ($p < .001$).

Next, the researchers used Kikuchi's Scale of Social Skills: 18 items (KISS-18, Kikuchi, 2004), the Affective Communication Test (ACT, Friedman, 1980), and the Japanese Interpersonal Competence Scale (JICS, Takia & Ota, 1994) to examine the validity of ChUSSI. The results showed that there were significant correlations between ChUSSI and the KISS-18, ACT, and JICS, except for the altruistic behavior scale of ChUSSI (AB) and the tolerance for ambiguity scale of the JICS.

Based on the results of the factor analysis and correlation analysis, the researchers proposed that the four factors of ChUSSI were appropriate for the assessment of social competence. They also suggested that further research was needed to balance the number of items in each factor and standardize ChUSSI to improve validity and reliability. Moreover, ChUSSI could also be useful for different groups of Chinese individuals, given that the factors of PM, SA, AB, CO were typical traits of Chinese culture.

2.4.2.2 Other-evaluations

Rating Scale of Social Ability (RSSA)Some Chinese researchers have also tried to collect information about social competence from other people than the individuals themselves. Liu and Gao (2005) developed the Rating Scale of Social Ability (RSSA) as a useful assessment to examine social competence of adults. They enrolled 1605 participants from 17 cities and adjacent rural areas basing on the following standards: (1) aged18 or over, (2) primary school education or higher, (3) no diseases affecting one's career and normal life/social activities, (4) no intellectual disabilities or mental disorders, (5) had peers who could evaluate the participant's situation. Through are view of previous research and consultations with practitioners in psychology, an original scale containing three subscales and consisting of 18 items was designed to evaluate participants' social competence.

Vocational ability, living ability, and social interactional ability of participants was evaluated by their peers. The results of the factor analysis showed that the Cronbach's alpha coefficients of the three subscales of RSSA ranged from .883 to .920, the split-half reliability coefficients ranged from .760 to .867, and the inter-rater reliability was .973, indicating that RSSA had acceptable reliability. The researchers also used principal components analysis to examine the construct validity of the instrument, and the Wechsler Adult Intelligence Scale-Revised by China (WAIS-RC)

to examine the criterion validity (with180 participants). Results of the principal components analysis showed that the cumulative value of all items was 61.23%, and the significant correlations between the subscales of RSSA and WAIS-RC were .373, .370, and .400; thus, the construct validity and criterion validity were demonstrated.

The medium correlation between RSSA and WAIS-RC IQ may be explained in that while IQ relates to learning ability, it does not correspond directly to social competence (Liu & Gao, 2005). Furthermore, it has been suggested that integration of IQ and social competence is necessary to examine an individual's competence. In summary, RSSA had acceptable psychometric properties in terms of reliability and validity and could represent the social competence of Chinese adults.

2.4.2.3 Clinic interview assessment

A series of clinical interview questions could provide a comprehensive assessment regarding multiple types of social situations and interactions. Based on experiences, practitioners have also introduced some related assessments of clinic interview to measure social competence that could represent an individual's abilities after impairment or accident. Previous studies have described such assessments in the field of psychological medicine (Liu & Gao, 2004).

Mental Handicap Rating Scale for Adults

The Mental Handicap Rating Scale for Adults was developed to measure capabilities of individuals with mental disabilities (Gong, Xie & Dai, 1986). The scale is rated by practitioners based on interviews or information provided by other people, and is suitable for mentally disabled individuals aged 16 and over. It contains four subscales regarding abilities pertaining to daily living, learning and working, orientation to time and person, and social interaction. Each subscale is evaluated from 0-4, and higher scores indicate greater mental disability.

Social Disability Screening Schedule (SDSS)

The Social Disability Screening Schedule (SDSS), derived from the Disability Assessment Schedule (DAS, WHO, 1978), was also introduced to assess deficiencies in social functioning of individuals with mental disabilities. Information is collected through interviews using ten items regarding community living for the disabled. The ten items include work status, marital status, parental role, social recession, extra-familial social activities, familial activities, familial role, self-care for daily living, interest in society, and responsibility & planning. Each item is rated from 0 to 2, and assigned a value of 9 (which is not calculated as part of the total score) if not suitable for a participant. SDSS is used to assess the social functioning of individuals with mental disabilities who live in the community. Total scores of 2 or more imply that there are deficiencies in social functioning.

2.4.3 Interventions

Interventions were classified into 2 types according to the participants.

2.4.3.1 Interventions for individuals with schizophrenia

The first type of intervention was social skills training for patients with schizophrenia, for which sample sizes and assessments used to examine the effects of social skills training were reported. The 5 studies of this type are shown in Table 3.

All of these studies were designed to examine whether the intervention was effective (in combination with medication) for treating patients with schizophrenia. With the exception of one study, patients were classified into training and control groups, and there was no bias of participants in these two groups. The training groups were treated with medication and social skills training, and the control groups were just given medication. After a period of treatment, patients' symptoms were examined using a series of clinical standards to evaluate the effects of social skills training for schizophrenia.

2.4.3.2 Interventions for college students

The second type of interventions studied were educational lessons to

improve social competence in university students, for which social competence problems were identified and solutions involving educational strategies were proposed. There were 3 studies of this type; findings from these studies are not presented because the research involved theoretical innovations in education rather than practical results.

2.5 Discussion

2.5.1 Definitions of social competence

2.5.1.1 Common elements in definitions

Although Chinese researchers have proposed definitions of social competence, there is currently no agreement among them. In reviewing the definitions presented in Table 1, two points regarding social competence can be outlined. First, effectiveness was proposed in previous studies as an important element to assess whether individuals had succeeded in acquiring or performing social competence (Chen Bin-bin, Li, Chen Xin-yin & Chen Feng, 2011; Liu & Zou, 2005; Liu & Gao, 2004, 2005; Zhou, Li & Zhao, 2006). Second, social competence should be represented in social interactions and social contexts (Cao, et al., 2009; Chen Bin-bin, et al., 2011; Liang, et al., 2012; Zhang, Wu & Li Lei, 2011; Zhang Xiao, 2011; Zhou, Li, Zhao, 2006).

These two common elements have also been proposed in other studies

from around the world. White (1959) defined social competence as “an organism’s capacity to interact effectively with its environment” (p. 297). Taylor and Asher (1984) proposed the concept of social competence as “the formulation and adoption of personal goals that are appropriate and adaptive to specific social situations and implementing effective behavior strategies for achieving goals” (p. 57). By referring to past definitions, Cavell (1990) also suggested many definitions of social competence, including “an individual’s ability to function within social contexts effectively”. Rubin and Rose-Krasnor (1992) defined social competence as “the ability to achieve personal goals in a social interaction while maintaining positive relationships with others over time and across situations” (p. 285). It is obvious that effectiveness, social interactions, and social contexts have been emphasized in past global studies. Similarly, Chinese researchers have defined social competence as social interaction behaviors and their effectiveness in Chinese social contexts, although they have given different descriptions to the definition of social competence in China.

2.5.1.2 Chinese definitions of social competence and social skills

Another issue regarding the definition of social competence should also be noted. In previous Chinese studies, differences and relationships

between the Chinese terms for social competence and social skills have not been distinguished. Although no study have discussed this problem in China, the English terms have been previously summarized by Nangle and his colleagues (mentioned in definitions of chapter 1).

As shown in Table 1, some Chinese researchers have proposed that social competence is structured in terms of specific individuals' skills related to cognition and behavior, such as listening, understanding, autonomy, verbal and non-verbal communication, emotional expression, coordination and self-control, and abidance by social rules (Chen Bin-bin, et al., 2011; Fang, Sang, Chen & Liu, 2009; Tong Yue-Hua, et al., 2000; Yu Gui-Min, et al., 2012; Yu Lu-Wen, 1994; Zhang Xiao, 2011). These definitions show that researchers have considered how social competence could be specified; therefore, it is appropriate to distinguish the Chinese terms for social competence and social skills. First, social competence is a comprehensive description that emphasizes an individual's traits and is assumed to be a general underlying capability. Second, social skills are a molecular description of a series of specific individual's underlying behaviors or performance. The two terms are closely related and describe the same capability for social interaction at different levels. The concept of social skills tends to specify this capability as a series of precise behaviors, whereas the concept of social competence tends to combine behaviors as a comprehensive social capability.

2.5.2Advantages and limitations of measures of social competence

2.5.2.1 Advantages and limitations of self-reports

Previous studies have shown that using self-report questionnaires is widespread in practice of clinicians (Meier & Hope, 1998), and that self-reports are a very efficient method for obtaining information about the social competence of an individual. In addition, another advantage of self-reports is that individuals' emotions and behaviors can be accessed and understood completely just only by individuals' themselves (Junttila et al, 2006). In addition, changes throughout treatment can be monitored continuously and easily by using self-report measures (Nelson, 1981).

Although there are some advantages of self-report measures, limitations also exist for Chinese participants. First, previous research has shown that individuals might magnify their positive aspects and minimize their negative aspects (Junttila et al, 2006). Therefore, it can be inferred that Chinese individuals may also overestimate their social competence and minimize their negative behaviors when they realize they will be evaluated according to their answers. Second, all self-report measures have been developed and normed based on general students; therefore, the sample might be unrepresentative. As previous study has indicated, self-report measures may be appropriate for university students, but the validity may

decline if the measures are applied in individuals with severely impaired (Norton, Grills-Taquechel & Raouf, 2010). Third, regional culture, education level, and life experiences can affect an individual's understanding of self-report questionnaire items and thereby reduce the effectiveness of self-report measures. Previous studies have shown that an individual's ability to read and understand, and the length and complexity of self-report measures, may relate to effectiveness (Andrasik, Heimberg, Edlund & Blankenberg, 1981), and diversities in language and terminology also may affect the administration of self-report (Hersen, Kazdin, Bellack & Turner, 1979). Considering the diverse regional culture and dialects in China, this limitation most likely is of importance.

2.5.2.2 Advantages and limitations of other-evaluations

Although only one other-evaluation measure of social competence for Chinese individuals has been developed, evaluations by others may be another valuable source of information regarding social competence of adults. Other-evaluations can reflect the effectiveness of an individual's behavior and emotional expression in group settings, by obtaining information from the perspective of others who are familiar with the individual. Others may be peers, teachers, parents, and even practitioners. In studies of social competence in children, researchers have pointed out

that peer evaluations might be more reliable as reducing the bias of potential influence (Bierman, 2004). In addition, teachers can observe interactions among children at school and are able to evaluate behaviors of children with better norms based on particular age of children (Pakaslahti & Keltikangas-Jarvinen, 2000). This implies that compared to self-reports, other-evaluations can probably reduce the possibility of overestimating the positive and minimizing the negative (as reported by individuals), while evaluating social competence in adults. In addition, other-evaluations could provide the information of individual's sociometric status, beyond simply their detailed behaviors. It is helpful to understand whether an individual's social sociometric status is improved after social skills training or psychological intervention (Erdley et al, 2010).

Despite the utility of other-evaluations, there are some challenges when employing this method. First, there is the issue that the other may be hesitant to evaluate an individual. China is a country that strongly emphasizes interpersonal relationships, and people tend to pay attention to their reputations within groups. Evaluating another person using assessments for social competence may be thought of as impolite and lead to negative feelings. Second, people who evaluate the social competence of individuals should be chosen carefully. With respect to studies about children, information collected from peers, teachers, and parents could represent multiple aspects of an individual's behavior across different

settings, but each aspect is not completely precise and may vary. For example, the differences in expectations and behavioral norms between home and school may lead to the variations between parents' and teachers' evaluations (Junttila et al, 2006). Third, other-evaluations can likely be affected by reputation biases such as an individual who has a bad reputation regarding to social interactions may continue to be evaluated as lacking in social competence even if the interactions have been improved after social skills training or psychological intervention (Smith et al, 2010).

2.5.2.3 Advantages and limitations of clinical interviews

Clinical interviews were often considered as critical criterion in clinic assessment, but the reality is that no evidence-based structured or unstructured clinical interviews have been developed to examine social skills functioning (Smith et al., 2010). Similarly, evidence of clinical interviews in China has been scarce. Although some assessments have been proposed, the researchers did not provide evidence-based findings to support them.

Two issues require explanation: (1) the definition of social competence is not clear, so practitioners have been unable to distinguish psychological treatment and physical functioning examinations from social skills measures. For example, the Adult Intelligence Disability Assessment Scales and Social Disability Screening Schedule (SDSS) are utilized to

measure the social functioning of individuals primarily with mental impairments, instead of social competence; (2) even assuming that the assessments are suitable to measure social competence in the Chinese, the individuals are people who suffered with mental or physical impairments, therefore generalization of the assessments is difficult.

2.5.2.4 Absence of behavioral observations and deficiency of multiple measures

Another important information source is behavioral observation. In studies of children, Cavell (1990) suggested that the information based on observations in natural environments could reflect entire pictures of child's reacting behaviors to social situations, and Merrell (2010) suggested that the situations which children interact with their peers in usual are the most suitable settings for observation. For adults, behavioral observations can occur in many different settings within an individual's natural environment, such as at home or in the workplace, ideally while the individual is interacting with others. Nonetheless, it has been widely known that ideal naturalistic observation is hard to obtain in usual (Bellack, Hersen & Lamparski, 1979). For adolescents, previous studies have shown that observing adolescents' social behaviors in their natural environments is relatively difficult since they were more reactive to be observed and their

particular behaviors might be more subtle (Inderbitzen, 1994). Given it is difficult to observe social behaviors of adults and adolescents in natural environments, researchers and practitioners tried to introduce analogue observation to solve these problems (Haynes & O'Brien, 2000); in particular, analogue observation has been used for role-playing of social interactions.

In this review, it was surprising that there was no assessment based on behavioral observations to measure social competence of adults or university students, regardless of whether it was naturalistic or analogue. In reference to the global previous studies presented in Chapter 1, it was clear that use of multiple measures was the most appropriate method to evaluate social competence. Given that existing assessments for Chinese adults have contained self-reports, other-evaluations, and clinic interviews, it was strongly suggested that assessments be developed for adults and university students to collect information on social competence based on behavioral observations.

2.5.3 Interventions for social competence

2.5.3.1 Effects and deficiencies of interventions for individuals with schizophrenia

Clinical practitioners have introduced social skills training for

combination with medication to improve symptoms of individuals with schizophrenia. Results have shown that training groups (treatment group) showed better improvement in symptoms; thus, the effects of the interventions were demonstrated. On the other hand, researchers have also offered their opinions based on their results. Cui Yong et al. (2004) pointed out that although positive and negative symptoms decreased and patients' cognitive functions were improved, the lack of effective assessments for cognitive functioning could limit practitioners in discovering exact changes in cognition. Huang Qin et al. (2005) suggested that social skills training was effective for improving negative syndromes; however, helping patients go back to their daily lives and social circumstances and use these learned skills was also necessary to maintain these improvements. Zhang Wei-Bo et al. (2011) discovered that social skills training could help patients realize the importance of drug treatment and learn how to manage drugs by themselves. In addition, it could help them understand how to monitor their symptoms so that early intervention could be achieved when there were recurrences of schizophrenia. Moreover, their studies demonstrated that the recurrence rate in the training group was significantly lower than in the control group a half year later, and suggested these improvements should be studied over a long follow-up period. Additionally, Zhang, Ye, Wang and Qiu (2006) found that positive symptoms could be reduced using medication, but that social skills training was a more effective treatment for

negative symptoms, and proposed introducing psychotherapy for three months or longer to reduce patients' scores on the BPRS.

Patients with schizophrenia often have impaired, deficient, and dysfunctional symptoms in their cognition, abilities, and behaviors. Chinese researchers have realized that these symptoms are related to patients' social skills, and have tried to introduce social skills training as part of clinical treatment to improve effectiveness. In previous studies, many assessments were used to measure patients' symptoms, but none of them was developed specifically to measure social skills. Thus, researchers could assess how symptoms changed, but not what kinds of social skills were specifically improved. Therefore, it is hard to design targeted social skills training to treat patients, because the deficiencies in patients' social skills are unclear. Moreover, it is also difficult to monitor symptoms of individuals' behaviors without appropriate assessment of social skills; thus, early intervention for recurrences is easily affected.

Since assessments for social skills are absent in social skills training, interventions may not be adequately precise and effects may be hard to evaluate completely. Therefore, valid assessments that can quantitatively assess social skills are expected.

2.5.3.2 Effects and deficiencies of interventions for university students

The participants in these studies were normal Chinese university students instead of patients with schizophrenia. Educators did not mention assessments of social competence in their studies. They described the problems of social competence occurring among university students and suggested educational lessons for improving students' social competence through the view of education.

Overall, problems of social competence occurring in university students pertained to four aspects. First was a lack of interaction skills, such as expressing, listening, and behaviors of implication. Second was a deficiency in the individual qualities of interaction, such as assertiveness, trust, and acceptance. Third was inappropriate emotion in interpersonal relationships, such as inferiority, fear, and independence. Fourth was inappropriate cognition regarding the self and surroundings, such as egocentricity, arrogance, and ignorance to optional courses (Fang et al., 2009; Yu Gui-Min, Su Chang & Cui Yi., 2012; Xing & Hong, 2002). Researchers have also suggested using educational lessons to solve problems of social competence. The contents of lessons had three points: (1) Tutors leading activities; for example, a multiple tutor policy was introduced to expand student's version to different subjects, and a consultant was assigned to groups of students to help them solve problems in daily lives. (2) Constructing a platform for practice; for example, giving

students jobs at school to let them participate in teaching, researching, and managing, or providing opportunities to let them apply their knowledge. (3) Systemic group activity; for example, offering a long-term course that provides students more opportunity to interact in groups, and teaches them how to appropriately express themselves, understand others, and solve problems in interpersonal relationships.

Although educators have proposed methods for improving students' social competence and have agreed that social competence is correlated with university students' adaptation to society, they have not indicated how to analyze the results of their programs and measure students' social competence. Training approaches that target skills for intervention have consisted of the following aspects: communication, assertiveness, relationship building, and social problem solving (Smith et al, 2010). Educators' programs can be analyzed for these four aspects, to ensure each approach has precise targets when lessons are designed. In addition, appropriate assessments should be introduced to measure students' social competence when lessons are implemented. Although it is easier to collect information about social competence from normal university students than individuals with mental impairment, multiple measures are still preferred because of improved accuracy over just a single assessment.

2.6 Conclusion

Based on the hypotheses of this study, the following conclusions can be inferred after the review.

First, many definitions of social competence have been proposed in China, and they have included the same elements as global definitions, such as effectiveness, social interaction, and social context. In addition, the Chinese terms of social competence and social skills are both used to describe an individual's capability for social interaction at different levels.

Second, some assessments have been developed in China, especially for collecting information about social competence from individuals themselves; however, assessments based on observations have not been reported.

Third, social skills training for patients with schizophrenia has been combined with medication treatment, and has been shown to be an effective intervention for improving symptoms and reducing rates of recurrence. In addition, educational lessons have also been proposed to improve social competence among university students, though the lessons need to be analyzed further with appropriate assessments.

As definitions have been clarified, assessments based on behavioral observations are expected to contribute toward multiple measures of social competence and the design of precise social skills training and educational lessons in further research.

Chapter 3 Verification of Interaction Rating Scale Advanced (IRSA) for Chinese university students (Part2)

3.1 Introduction

3.1.1 The Importance of Part 1

Before the studies focused on the social competence of adults and university students were reviewed, it was difficult to develop assessments for these concepts because the following questions had not been resolved. First is the problem of various definitions. When research on social competence is conducted, it needs to be clear that the Chinese terms for social competence and social skills should describe the same capability of individuals, even though they have different definitions. In addition, confirming definitions is necessary before employing previous global studies to develop assessments for Chinese adults. Second is the problem of appropriate measures. Without a review of existing assessments, it is unclear what kinds of assessments have been developed and how multiple measures have been built to measure social competence in adults. Moreover, in terms of the development of assessments, it is preferable to fix the flaws in existing measures, rather than develop new assessments that are similar to existing measures. Third is the problem of application. The development of assessments must take into consideration whether the developed

assessments are fit for need in practice. These problems were resolved in Part 1, thus indicating the direction for Part 2.

3.1.2 Indications from Part 1

The first indication from Part 1 is regarding the definition of social competence. Although there is no agreement among definitions, common elements can be elicited, such as the effectiveness of behavioral performance and the contexts of social interaction. In addition, differences and similarities between the Chinese terms for social competence and social skills suggest that social competence can be specified as a series of skills that reflect appropriate behaviors in interactions. These results indicate that an appropriate assessment will be applied in an interactional setting relevant to an individuals' social context and will quantify individual's behaviors in interactional performances.

The second indication from Part 1 is the inadequacy of multiple measures for social competence, as assessments based on behavior observation are absent. Currently, most assessments of social competence for adults and university students collect information from individuals themselves; assessments based on other-evaluations and clinical interviews are few. Moreover, there is no assessment of social competence for adults and university students based on observations of their behaviors in interactions. As suggested in the overview in Chapter 1 and Part 1,

measures based on multiple sources of information of social competence are expected to be the most objective evaluations, and an assessment based on behavioral observations will mean that there are a complete range of measures of social competence for university students.

The third indication from Part 1 is that assessments for measuring social competence related to interventions have not been appropriately addressed. Professionals have introduced social skills training programs to treat patients with mental illnesses such as schizophrenia, and demonstrated that the interventions were effective based on an examination of the patients' symptoms; however, they did not provide evidence that the interventions were designed according to deficiencies in patients' targeted social skills. The absence of appropriate evidence may affect the precision of interventions, making it hard to judge the real effectiveness of interventions for improving the social competence of individuals. Moreover, existing self-report assessments have not been aimed at patients with severe mental illness, and other-evaluations are easily affected by reputations and the impression that patients have been treated previously. Therefore, assessments based on behavioral observations are appropriate to assess individuals' social competence. Professionals can design precise interventions according to targeted deficits in social skills and evaluate the effects of these interventions.

In addition to these three points, the overview in Chapter 1 indicates that

targeted groups of individuals should be determined while developing assessments, and that a three-domain construct of social skills has been proven to be a stable framework for assessing social competence. Although no previous study has employed the three-domain construct to measure social competence of university students, Chinese researchers have indicated that performances and behaviors reflect "coordination," "self-control," and "assertion" in their definitions. In addition, existing assessments have specified social competence as a series of functional and interactional abilities related to "coordination," "self-control," and "assertion." Therefore, it is probable that the three-domain construct reflects social competence in Chinese university students.

3.1.3 The significance of this study for school nursing

3.1.3.1 Need for assessments of social competence in school nursing

Social interactions can not only relate to optimistic mental states as appropriate social skills develop positive social relationships, but also can cause pessimistic results when social skills are not effective in achieving successful interactions. It is important that individuals can acquire, develop, and maintain appropriate social skills across their lifespan (Bierman, Torres, & Schofield, 2010). Although university students are legally considered adults in China, they face issues similar to those experienced during

adolescence, as they transition to adulthood. Previous studies have indicated that deficits in social skills are risk factors in adolescence and they are likely to cause emotional difficulties and antisocial behaviors in young adulthood (Dodge, Coie & Lynam, 2006; Whitton, Larson & Hauser, 2008), and that a lack of social skills will lead to more obvious and harmful effects as development of adolescents (Buhrmester, 1990).

Given that university students are experiencing an important period in their lives, during which they need to perform appropriate social skills to extend their social circles and develop successful interpersonal relationships, educational experts have suggested introducing social skills training into regular courses. They have also advocated that universities should emphasize students' social interactional situations that relate to their mental health and psychological status (Fang et al., 2009; Xing & Hong, 2002; Yu, Su & Cui, 2012). These suggestions imply that educators and professionals should monitor students' mental health and psychological status with respect to social competence. This emphasis brings with it a new responsibility for school nursing, and especially for nursing professionals, who are generally concerned with the physical and mental health of university students and play a preventative role on campus. Therefore, objective methods for measuring social competence are necessary for nursing professionals. However, the review in Part 1 has demonstrated that because of the disadvantages in existing assessments of

social competence that have been developed for Chinese adults and university students, there is no objective measurement for professionals to use.

3.1.3.2 Multiple measures are expected by nursing in assessing social competence

Part 1 indicated that studies focusing on adult and university students have not been adequate until present, especially with respect to assessments that can quantify social competence based on precise performances. In addition, previous studies have indicated that use of a single type of assessment is not adequate for understanding individuals' social competence, given the existing disadvantages of each type of assessment. Therefore, multiple measures that involve multiple types of assessments are considered to be the preferred method for measuring social competence, and can provide objective measures for nursing professionals to understand the social competence of university students.

3.1.3.3 Validity of assessments using the three-domain construct and behavioral observations

Currently, multiple measures for assessing social competence are not complete since assessments based on behavioral observations for adults have not been reported in China. Assessments based on behavioral

observations of social competence by outside observers according to individuals' interactional performances can enrich multiple measures and provide quantitative data. In addition, the three-domain construct has not been introduced to measure social competence among university students in China. As discussed in the intervention section of Part 1, it is important for professionals to understand the kinds of interactional behaviors that are inappropriate and that require improvement. An assessment based on the three-domain construct can provide nursing professionals with a valid method for understanding social competence, and support them in caring for university students needing assistance or interventions for mental health issues.

3.2 Objective

Based on the indications from Part 1, Part 2 aimed to provide an assessment for behavioral observations of social competence in Chinese university students and examine if the three-domain construct ("coordination," "self-control," and "assertion") was suitable for this population.

3.3 Methods

3.3.1 Definition

In this study, social competence was defined as “the ability to achieve personal goals in a social interaction while maintaining positive relationships with others overtime and across situations” (Rubin & Rose-Krasnor, 1992, p285).

3.3.2 Experiment and setting

In this study, a group game called “Keep it Steady” for 2 to 4 players was introduced. This game requires participants to use their manual dexterity, balance, and critical thinking skills as they take turns drawing sticks from a tangled bundle on a table without disturbing the rest of the stack. There are 3 colors of sticks including blue, red, and yellow in this game, and thicker sticks are worth higher points. The points of sticks, which are drawn by participants, are calculated as their total scores, and the player with the highest score is the winner. This game is fun and easily enjoyed by participants, so it creates a naturalistic environment in which participants display their social skills while they are interacting with their partners in the game. In order to code the performances of participants, cameras were set to record their gestures, vocalizations, and facial expressions throughout

the duration of the game.

The experiment using the “Keep it Steady” game was implemented from December 2012 to January 2013. The game aimed to create an interactional setting for participants to show their interactional skills instead of introducing interventions to improve their social competence. The duration of the game depends on the participants’ cooperation. Generally, it lasts about 5 minutes at a time. Participants were asked to play two times to show their interactional performance adequately for about 10 minutes.

At present, there is no evidence that a game lasting 10 minutes can change individuals’ social competence. In addition, previous studies focused on interventions have summarized the necessary approaches to improve social competence. As indicated in previous research, the systematic approach consists of core therapeutic techniques including instruction, modeling, rehearsal, feedback, and reinforcement (Smith et al, 2010). It is evident that this game does not match the systematic approach; thus, it cannot change participants’ social competence, and can be used to create an interactional setting for performing social skills.

Before proceeding with the experiment, the rules of the game and the objective and procedure of the study were explained to each dyad of participants. Then, they could start to play at will, while previously prepared cameras began to record their interactions. The game was played twice by each dyad in order to record adequate performances in interactions.

Participants were then asked to complete a set of questionnaires after the game that would be utilized to examine the validity of the assessment developed in this study.

3.3.3 Measures

3.3.3.1 Interaction Rating Scale Advanced

In this study, Interaction Rating Scale Advanced (IRSA) was introduced to assess participants' social competence, and an IRSA for Chinese university students was expected to be verified.

IRSA was developed as an advanced version of Interaction Rating Scale (IRS). IRS is a reliable and valid assessment to evaluate social skills of children under eight years old through observation of child-caregiver interactions (Anme et al, 2010). IRSA can be utilized to assess the social competence of adults through their observations of interactions. It is consisted of 92 items and formed by 6 subscales, which are "self-control," "expressivity," "sensitivity," "assertiveness," "responsiveness," and "regulation". The 92 items were selected from several sources: original items by the study authors, several overlapping items from Interaction Rating Scale (IRS) (Anme et al, 2010), the Social Skills Rating Systems (SSRS) (Gresham & Elliot, 1990), and ENDCOREs (Fujimoto & Daibo, 2007).

Two different sets of items are scored for each subscale of IRSA: behavioral items and impression items. The presence of behaviors is assessed for each item and subscales (1 = no, 2 = unclear, 3 = present once, 4 = present twice or more). The behavioral score of each subscale is calculated by summing the items in each subscale, as well as summing all items to provide the overall behavioral score. In addition, impression items are rated on a five-point scale (1 = not evident at all, 2 = not clearly evident, 3 = neutral, 4 = evident, 5 = evident at a high level). Since IRSA has not been proven valid for Chinese university students, scores on the impression scales may not be related objectively to scores for the presence of behaviors; thus, scores on the impression scales were not used in the analysis of Chinese university students. Moreover, this study focused on the presence of behaviors and identification of valid behavioral items for Chinese university students; therefore, the impression items were not introduced. Evaluators completed the checklist composed of the 92 items focused on participants' behaviors (e.g., "expresses his/her own feelings to the partner,""looks at the partner's face or eyes when the partner attempts eye contact,""follows the rules of the game," and so on).

Internal consistency of IRSA was measured by Cronbach's alpha (α = .84) and the inter-observer reliability was found to be 90%. Previous research has shown that IRSA has acceptable reliability and is appropriate for evaluating the social competence of adults during interactions (Anme et,

2011).

3.3.3.2 Social Skills Inventory

The Social Skills Inventory (SSI) is a self-report measure introduced to the psychological research by Riggio (1986). SSI is designed to measure the basic emotional and social communication skills. It includes 6 scales which are “Emotional Expressivity (EE),” “Emotional Sensitivity (ES),” “Emotional Control (EC),” “Social Expressivity (SE),” “Social Sensitivity (SS),” and “Social Control (SC).” SSI is based on a theoretical model of communication skills including three primary skills: expressive skills, sensitivity skills, and control skills. SSI is easy to administer and is associated with performance measures of social skills as well as objectively rated socially skilled behavior.

SSI was originally developed for use in personality and social psychology research, but is now widely used clinical settings and for training. It measures social skills with 90 items in six domains and provides a total score to reflect the global level of social skill. Each item is rated on a five-point scale and higher scores mean higher social competence. Since SSI has been proven effective as an assessment to measure social competence in Chinese university students with acceptable reliability (Cronbach’s alpha= .81, Cao et al, 2009), it was introduced to examine the validity for verifying IRSA in this study.

3.3.3.3 ENDCOREs

ENDCOREs was developed as a set of 24 items to assess interactional skills with samples of Japanese adults (Cronbach's alpha were from .82 to .93) by Fujimoto and Daibo (2007). It is consists of 6 factors which are self-control, expressivity, assertiveness, decipherer ability, acceptance, and regulation of interpersonal relationships. Each subscale contains 4 items to measure an individual's social competence (e.g., "expresses thoughts and feelings precisely," "reads the game partner's feelings and thoughts accurately," and so on), and each item is evaluated by individuals themselves on a 7-point scale. Higher scores indicate better ability in terms of social interactions. Considering ENDCOREs was an assessment of social competence for Japanese adult, it was introduced as another examination for validity in this study.

3.3.3.4 Autism Spectrum Quotient

The Autism Spectrum Quotient (AQ) is a self-administered questionnaire consisting of fifty items (Baron-Cohen, Wheelwright, Skinner, Martin & Clubley, 2001). It was developed to examine the traits related to the autistic spectrum for adult individuals with normal intelligence.

The questions cover five different domains associated with the autism spectrum: social skills, communication skills, imagination, attention to detail, and attention switching/tolerance of change. Each question has the

response options “definitely agree,” “slightly agree,” “slightly disagree,” or “definitely disagree.” An "agree" response is elicited from approximately half of the questions as well as a “disagree” response is elicited from the other half. “Definitely agree” or “slightly agree” responses are scored 1 point for 24 of the items, and “definitely disagree” or “slightly disagree” responses are scored 1 point for the other 26 items. A total score can be calculated and three intervals reflect the tendency toward autism, where scores from 0 to 25 indicate little or no autistic traits, scores from 26 to 32 indicate some autistic traits or Asperger's syndrome, and scores from 33 to 50 indicate significant autistic traits. Since AQ has been used to examine the autistic traits in Chinese adult (Cronbach’s alpha= .80, Liu Meng-Jung, 2008; Tang Su-qin, Wang Jian-ping, Liu Jun, Sun Hong-wei &Tang Tan, 2012), it was introduced to determine if the verified IRSA could reflect a tendency toward autism in Chinese university students.

3.3.3.5 The Chinese versions of SSI, ENDCOREs and AQ

Since there are no published Chinese versions of SSI, ENDCOREs and AQ at present, bi-directional translation was introduced in this study (Beaton, Bombardier, Guillemin, & Ferraz, 2000; Sousa & Rojjanasrirat, 2011). The experts of Chinese and Japanese translated the Japanese versions of SSI, ENDCOREs and AQ into Chinese; then translated the Chinese version back to Japanese. The differences between original and

translated Japanese version were discussed and confirmed by the experts to ensure the Chinese questionnaires were precise and valid for Chinese university students. The internal consistencies of items of Chinese versions were calculated respectively and the Cronbach's alphas were all acceptable in this study sample (SSI: alpha = .78; ENDCOREs: alpha = .84; AQ: alpha = .76).

3.3.4 The foundation of social competence in the present study

Regarding definitions of social competence, although there is no agreement, common elements suggest that an appropriate definition needs to address effectiveness, behaviors of the individual and social contexts (Nangle et al., 2010). This means that social competence is displayed as a series of behaviors of individuals and that these behaviors are expected to be effective in achieving individuals' goals. Moreover, the behaviors should be performed in social interactions and the effectiveness needs to be judged within particular social situations.

On the other hand, the three-domain construct of social competence, including assertion, coordination, and self-control, has been demonstrated as a common and stable construct (Gresham & Elliot, 1990; Caldarella & Merrell, 1997; Elikskin L. K & Elikskin N, 1998; Anme et al, 2011). This construct indicates that social competence can be reflected by behaviors that relate to the capabilities of assertion, coordination, and self-control.

Moreover, the social situations of individuals may determine whether these behaviors satisfy the capabilities of the three domains. In addition, it is important that individuals perform these behaviors in their social interactions with others. This study was carried out based on the three common elements in the definitions and the three-domain construct of social competence (See Figure 1).

Now that the foundation of this study has been described, the assessment to evaluate social competence can be summarized. First, the assessment should aim to evaluate capabilities regarding assertion, coordination, and self-control, and additional capabilities regarding social competence depending on the social situations of individuals. Second, these capabilities can be described as a series of appropriate behaviors that appear in individuals' social interactions, and these behaviors need to be evaluated quantitatively by the assessment. Third, regarding the efficiency of the assessment, it should evaluate important behaviors that can reflect the social competence of individuals, rather than all behaviors that appear in social interactions.

3.3.5 Reasons for using IRSA in this study

3.3.5.1 Need for rating scales and behavioral observations

Previous study has pointed rating scales are effective and time-efficient assessment for evaluating social skills (Merrell, 2001). Evaluators who are in same social contexts of subjects and familiar to subjects are asked to rate varied aspects of individuals' social behaviors according to their judgments and observation, this rating can provide information about low frequency but important behaviors of subjects (Erdley et al, 2010). In addition, researchers also suggested that direct observations should be combined with rating scales to identify the actual targeted behaviors for need of remediation of social skills (Elliott, Malecki & Demaray, 2001). Moreover, multiple types of assessments have been recommended as the preferred method to measure social competence. Therefore, rating scales of behavioral observations are necessary for Chinese university students, given that there is no assessment based on behavioral observations of social competence for adults at present.

3.3.5.2 Issues of race and social context

Behaviors appearing in social interactions derive from individuals' social context, and issues regarding race and social context in assessing social competence have been discussed in previous studies. Feng and

Cartledge (1996) noted that most norms regarding social skills were developed based on white, middle-class, Western children, and it is questionable that these norms are applicable to other children with different social cultures. Norton, Washington, Peters, and Hayes (2010) also hypothesized that since scoring and norms for evaluating behaviors are usually considered from a western perspective, appropriate behaviors in certain social contexts may not work effectively in other social contexts. As showed in their example, Chinese women's decent behaviors are customary and appropriate within Chinese social culture, and they should not be considered less socially skilled for behaving in a very reserved manner (Norton et al, 2010). Therefore, it is suggested that the observer should modify the definition and assessment of social skills based on behaviors reflecting individuals' appropriate cultural norms. IRSA is developed for adults from Japan, who share similarities in culture and race with those from China. Therefore, IRSA is considered the preferred assessment for Chinese university students.

3.3.5.3 Fitness of IRSA in terms of the definition and construct of social competence

In this study, IRSA was examined to verify if it can be used with Chinese university students. IRSA is a rating scale based on behavioral observations. It assesses social competence according to observations of

the presence of behaviors that appear in social interactions, such as effectively maintaining positive relationships to complete games. Therefore, its utilization fits with the common elements of definitions of social competence. Furthermore, IRSA factors, including assertiveness, expressivity, sensitivity, response, coordination, and self-control, were developed based on the three-domain construct of social competence. The relationship between IRSA factors and the construct of social competence is shown in Figure 2.

Since IRSA factors are closely correlated with the construct of social competence, IRSA is an appropriate measure to examine if the three-domain construct is suitable for Chinese university students in this study. A previous study showed that IRSA had acceptable reliability and can evaluate the social competence of adults during interactions (Anme et al, 2011).

3.3.6 Participants

Data were collected at a national key university located in a city of Sichuan province of China. Fifty-eight university students were recruited to randomly match pairs in Part 2; all were over 18 years old (mean age = 20.2) and there were 19 males and 39 females.

Differences in social competence between males and females have been

examined in previous studies in China. Although a previous study found that males had higher social competence than females in China (Cao et al., 2009), many other previous studies did not support this result (Liu & Zou, 2005; Liu & Gao, 2005; Mao & Daibo, 2006; Zhuang, et al., 2004). More importantly, differences in the construct of social competence between males and females have not been supported by previous studies (Anme et al, 2011; Gresham& Elliot, 1990; Kolb & Hanley-Maxwell, 2003). Therefore, gender was not considered to be an influential factor in the analysis.

Since the study was conducted at a national key university, students came not only from Sichuan province and the west area of China, but from all areas of the country. Moreover, students of this university are not limited in terms of subjects, because it contains almost all subjects as a national key university. Among the 58 participants of this experiment, 36 came from west areas, 20 came from east areas, and 2 participants' native places were unclear. Information regarding native places of participants is provided in Table 4.

3.3.7 Data analysis

3.3.7.1 Coding behaviors with IRSA

At first, the groups of two evaluators coded the participants' observed behaviors using the 92 IRSA items (Original Japanese version). Behaviors

appearing in the interaction were coded as follows. If the participant displayed the behavior described in the item once, a score of 3 was given, and if the participant displayed the behavior two or more times, a score of 4 was given. Conversely, if the participant failed to display the behavior described by the item, a score of 1 was given. In addition, if the participant's behavior was similar but not clear enough to be described as the item, the behavior was coded as "unclear" and a score of 2 was given. The total score was the sum of the scores that the participant received on all of the factors, and a higher score indicates a higher level of social competence.

To ensure preciseness of the coding, the evaluators had to meet three conditions. First, the evaluators had to have grown up in China and Chinese culture so that they can understand university students' behaviors and habits in daily lives. Second, they had to understand both Chinese and Japanese so that they could use IRSA, written in Japanese, to rate Chinese university students' interactional performances. Third, all evaluators had to be trained with videotape of social interaction for making behavioral ratings of behavioral observations using IRSA, to rate interactional performances of Japanese adults so that they can utilize IRSA expertly; furthermore, they were asked to be trained for evaluating Chinese university students' performances multiple times with IRSA to attain a rating concordance higher than 90%.

3.3.7.2 Collection of items appropriate for Chinese individuals

As suggested by previous studies, the definition and assessment of social skills should be modified basing on individuals' behaviors that accepted by social validity and culture (Bierman et al., 2010; Norton et al, 2010). Therefore, items that were appropriate for Chinese individuals needed to be collected first. Given that IRSA items were developed for Japanese adults initially, it is necessary to consider if the items are appropriate for evaluating the behaviors of Chinese university students.

Since the specific skills related to social competence should be valuable rather than just be general for avoiding the invalidity of assessment (Gerhardt & Mayville, 2010), and quantitative data regarding social competence is needed for evaluation and intervention (as indication from Part 1), trained evaluators coded the behaviors of Chinese university students using all 92 items, and examined the distribution of scores for each item.

3.3.7.3 Exploratory factor analysis to identify factors

Finally, exploratory factor analysis (EFA) was applied to examine the 40 items that were collected for adaptation among Chinese university students. A new version of IRSA (IRSA-28), which is adaptable for Chinese university students, was constructed using EFA.

Since no previous studies have confirmed that the three-domain

construct (including assertion, coordination, and self-control) is stable for Chinese university students, it is difficult to estimate the number of factors or assume that the extracted factors can be explained by the three-domain construct. Thus, the goal of Part 2 was to identify an unambiguous factor structure that contained relatively few factors and could be reasonably explained by the items. The principal components method provides an efficient approach to extract the principal factors in a small sample size and arrange the items to explain corresponding factors; thus, it was preferred in this study.

Eigenvalues indicate the power of factors to explain an adequate amount of the data variance. Generally, eigenvalues greater than 1 are considered an important principal in deciding the number of extracted factors in factor analysis; however, the cumulative proportion of explained variance should also be considered to ensure that additional factors explain more variance. In this analysis, both eigenvalues and cumulative proportion of explained variance were considered as criterion to select the number of factors, given that this criterion can retain relatively few factors while including factors that explain more variance.

Since there is no previous study that can be referred to in deciding the number of factors for Chinese university students, all potential factor structures should be considered while examining if the three-domain construct is suitable. Theoretically, many different factor patterns with

different numbers of factors and cumulative proportions can be constructed based on the 40 items; however, some patterns cannot be reasonably explained by the items. In some situations, when there are problems with the data that cannot be resolved by manipulating the number of factors, dropping problematic items can resolve the issues (Costello & Osborne, 2005). Therefore, items were dropped one-by-one and EFA were rerun repeatedly; all potential patterns of different numbers of factors were analyzed using EFA. Finally, promax rotation was used to rotate the extracted factor patterns, given that previous studies have demonstrated that the three-domain pattern shows moderate correlations among the factors.

3.3.7.4 Examination of the validity of IRSA-28

Correlations between scores on IRSA-28 and SSI and ENDCOREs were analyzed to examine the validity of IRSA-28. Moreover, the correlation with AQ was also calculated to determine if IRSA-28 could reflect a tendency toward autism in Chinese university students.

3.3.7.5 Analysis software

SAS 9.1.3 was used for data analysis.

3.3.8 Ethical considerations

This study was approved by the ethics committee of the University of Tsukuba. The rules of the group game, and the objective and procedure of this study were explained to all participants before they agreed to sign an informed consent form; meanwhile, they also were notified that they could withdraw from this study at any time. The anonymous data were collected and indentified by personal ID system in this study. All participants' personal information was reserved strictly.

3.4 Results

3.4.1 Descriptive statistics

The coded data of IRSA were summarized using descriptive statistics; the results are presented in Table 5. Fifty-two items, for which the proportion of the same score was higher than 95%, were eliminated from the 92 items, because a higher proportion of the same score indicates that the items were not valid for evaluating important behaviors of Chinese university students.

3.4.2 EFA

Exploratory factor analysis was applied repeatedly to examine the factors and their items. Items were dropped that had factor loadings smaller than

0.4 and could not be explained in terms of their corresponding factors. For example, one result contained 40 items and four factors (as shown in Table 6) and some items had acceptable factor loadings higher than 0.4, but could not be explained in terms of their corresponding factors. The example in Table 6 was not the only unexplainable factor structure; other factor structures with different numbers of factors also had same problems. Two explanations were considered for these results. One is that some of the 40 items may be not appropriate for Chinese university students, even though they were observed in this study. Another is that the items may fit but there is not enough data regarding observed behaviors to support the analysis. Regardless of the explanations, these items are problematic in this study. Therefore, in order to extract a reliable and valid factor pattern, problematic items were dropped out of the EFA repeatedly.

Finally, a four-factor pattern and 28 items were extracted; the results are shown in Table 7. This pattern demonstrated acceptable values of Cronbach's alpha (higher than 0.8), factor loadings (greater than 0.4), and variance that was explained by all factors (cumulative proportion was 80%). This factor pattern had acceptable results and the factors could be reasonably explained by all corresponding items. As shown in Table 7, the average inter-item correlations in the four factors were .96, .95, .92, and .96, and the Cronbach's alpha coefficients of all factors was .97. The values of the factor loading of items ranged from .47 to .95. The total variance

explained by each factor was 22.40 (the result by SAS software 9.1.3) which means that the factors explain 80% of the total variance (22.40/28). In addition, Table 8 shows that the inter-factor correlations ranged from .43 to .60.

3.4.3 Correlations

The Pearson correlation coefficients were examined between the revised IRSA and SSI, ENDCOREs, and AQ. Table 9 shows the correlations between IRSA-28 and SSI. The overall correlation was significant at .45, and the correlations among the four factors of IRSA-28 and SSI were significant at .48, .50, .42, and .41. Table 10 shows the correlations between IRSA-28 and ENDCOREs. The overall correlation was significant at .57, and the correlations among the four factors and ENDCOREs were .53, .61, .56, and .69. Table 11 presents the correlations between IRSA-28 and AQ. The overall correlation was significant at -.42, and the correlations among the four factors and AQ were significant at -.41, -.49, and -.44. Additionally, the correlation between age and scores on IRSA-28 was examined using Spearman correlation analysis. Table 12 shows the correlation between IRSA-28 and age; only “self-control” was significantly correlated with students’ age at .28.

3.5 Discussion

3.5.1 Applicability of IRSA in this study

This study is an experimental investigation of the development of a rating scale for social competence among Chinese university students. As mentioned in Part 1, each type of assessment has disadvantages, so that no single measurement is qualified to reflect social competence completely. Moreover, assessments that have been developed to measure social competence in adults and university students have been insufficient in China. In this study, an objective and appropriate assessment to measure the social competence of university students (in a Chinese social context) based on behavioral observations was planned, given that there was no such assessment in China at present.

Although researchers have developed assessments to measure social competence for adults globally, it was necessary to consider whether existing assessments were reasonable for use with Chinese individuals, because such assessments could be affected by internal and environmental factors, such as the social context and development of individuals (Norton et al, 2010). Interaction Rating Scale Advanced (IRSA) has been proven an effective assessment to measure the social competence of adults and high school students in Japan (Anme et al, 2011). Considering the similarities in race and traditional cultures between China and Japan, it was reasonable to

employ IRSA in the development of an assessment for Chinese university students.

3.5.2 Feasibility of the sample size for EFA

3.5.2.1 Optimal sample sizes for EFA from previous studies

An explanation regarding the issue of sample size is needed before discussing further results. Prior studies had focused on this issue given application of EFA was often influenced by inadequate sample size in practices (MacCallum, Widaman, Zhang & Hong, 1999; Tanaka, 1987).

Previous studies have suggested applicable sample sizes for exploratory factor analysis. For example, Winter, Dodou and Wieringa (2009) summarized the suggestions from previous studies, such as a minimum sample size of 200 recommended by Guilford (1954), a range of minimum sample sizes from 50 to 1,000 suggested by Comrey (1973), the conclusion that above 200 is large and below 50 is small proposed by Gorsuch (1974). Another hand, some researchers have focused on the subjects to variables (STV) ratio and recommended that the STV ratio should range from 3:1 to 20:1 (Cattell, 1978; Hair, Anderson, Tatham & Grablowsky, 1979).

Since it is very difficult to collect large samples in some experimental research, previous studies have reviewed the effectiveness of EFA with small samples in educational, psychological, and behavioral research. Henson and Roberts (2006) reported that in practices of EFA, 42 subjects

were analyzed as minimum sample size and 3.25:1 were found as minimum STV ratio; in addition, 11.86% of reviewed studies used a ratio of less than 5:1. Costello and Osborne (2005) also found that 14.7% of studies used a 2:1 or less STV ratio, and 25.8% of studies used 2:1 to 5:1 ratios in principal components or exploratory factor analysis. Other studies have indicated that not only sample size, but also high communalities (Acito & Anderson, 1980; Pennell, 1968) as well as a large number of variables per factor (Browne, 1968; Tucker, Koopman & Linn, 1969), contribute positively to factor recovery.

3.5.2.2 Important conditions regarding the issue of sample size for EFA

Since the level of communalities, loadings, number of variables in each factor, and the number of factors can determine if the sample size is reasonable and optimal for studies, it is difficult to determine whether absolute sample size or the STV ratio is more important in factor analysis (Gagné & Hancock, 2006; MacCallum, et al, 1999). For example, previous study pointed out that high communalities normally implied good dataset regardless of sample size, level of overdetermination, or the presence of model error (MacCallum, Widaman, Preacher & Hong, 2001). MacCallum et al. (1999) also suggested that communalities should all be greater than .60, or the mean level of communality should be at least.70; moreover, at least four variables per factor, and perhaps as many as six variables, were

expected in terms of overdetermination of the factors (Fabrigar, Wegener, MacCallum & Strahan, 1999). In addition, five or more strongly loading items of .50 or better are desirable and indicate a solid factor, since a factor with fewer than three items is generally weak and unstable (Costello & Osborne, 2005). Furthermore, if a pattern has four or more variables with loadings above .60, the pattern may be explainable regardless of the size of the sample (Guadagnoli &Velicer, 1988).

Generally, the important conditions in terms of the issue of sample size can be summarized as follows: (1) there is at least approximately a 2:1 or higher STA ratio, (2) all communalities are higher than .60 or the mean value is .70, and (3) four or more items exist in each factor. In this study, there were 58 subjects in total and 28 items were extracted for establishing IRSA-28. Based on the important conditions of sample size recommended by previous studies, the STV ratio (over 2:1), communality (all above .60), and items in each factor (6 or more items) were examined. These results documented that the sample size of this study is feasible for EFA and the pattern of factors is solid.

3.5.3 The four-factor pattern with 28 items

3.5.3.1 Naming the four factors

In this study, IRSA-28 with a four-factor pattern for adaptation to

Chinese university students was constructed based on IRSA. Factor 1 contained 7 items and was named “Sensitivity.” This factor reflected an individual’s sensitivity in quickly noticing other people’s meaning and responding appropriately with vocalizations, facial expressions, or behaviors when the partners expressed themselves vocally or non-vocally (e.g., “Vocalizes or speaks in response to the partner's verbalization”; “Babbles, makes a facial expression, or moves in response to the partner's behavior or nonverbal cues”). Factor 2 contained 8 items and was named “Assertion.” This factor represented an individual’s ability to take the initiative to express himself/herself actively to others with reasonable and logical expressions (e.g., “Shows self-assertiveness to the partner through a gesture”; “Expresses his/her ideas after indicating his/her understanding to the partner through expressions and gestures”). Factor 3 contained 7 items and was named “Coordination.” This factor indicated the ability to make positive and thoughtful expressions or use euphemisms when difficulties arose during their interaction (e.g., “Shows empathy through verbal or non-verbal responses when the partner is in a bad mood”; “Talks to the partner positively or encouragingly during the assignment”). Factor 4 also contained 6 items and was named “Self-control.” This factor referred to the ability of individuals to control themselves and not violate agreements or express themselves negatively(vocally or non-vocally) when the interaction could not proceed as they wanted (e.g., “Does not turn away from the

assignment and pays close attention to the partner"; "Concentrates on the task and is gentle with the materials").

3.5.3.2 New factor and internal consistency

Although it was hypothesized that a three-domain construct may explain social competence in Chinese university students, the factor analysis showed that in addition to the three-domain pattern, including "Assertion," "Coordination," and "Self-control," a new factor named "Sensitivity" was added in IRSA-28 for Chinese university students. Previous studies have shown that the three-domain pattern reflected social competence, but that other factors probably also existed in different groups (Anme et al, 2011; Caldarella & Merrell, 1997; Elkskin LK & Elikskin N, 1998; Fujimoto & Daibo, 2007; Gresham & Elliot, 1990; Kolb & Hanley-Maxwell, 2003). For example, Gresham and Elliot (1990) proposed the construct of social skills with five factors including "cooperation," "empathy," "assertion," "self-control," and "responsibility." Fujimoto and Daibo (2007) also noted 6 factors, including "self-control," "expressivity," "assertiveness," "decipherer ability," "acceptance," and "regulation of interpersonal relationships," to evaluate social competence. The results of this study are similar to the findings of these previous studies and indicated that the three-domain pattern is appropriate to construct social competence in Chinese university students; however, other potential factors also may

exist.

In IRSA, “Sensitivity” was a new factor and was developed from the “Coordination” in the three-domain construct (see Figure 2). As shown in Table 5 and Table 7, all 7 items of the “Sensitivity” factor of IRSA-28 were extracted from the “Sensitivity” factor of IRSA. This similarity implied that “Sensitivity” of IRSA-28 also developed from the “Coordination” factor, which belongs to the three-domain pattern (See Figure 3). Since “Sensitivity” exists both in IRSA and IRSA-28, it is probable that “Sensitivity” is essential for both Chinese university students and Japanese adults. Similar to social interactions in Japanese culture, the sensitivity to notice others’ meanings from vocal and non-vocal expressions is very important in China, since individuals from Chinese cultures emphasize how to express their feelings, emotions, and opinions modestly and implicitly, and especially to consider others’ dignity. In fact, previous studies have indicated the reasons why sensitivity is necessary for individuals within Asian culture. For instance, Ingman (1999) found the variation in vocal tone might be absent when Chinese people interact with verbal communication since tonal pattern of the Chinese language is different from American language. Moreover, in Japan, silence is considered as a virtue, and silent smiling usually be used to alleviate anxiety in uncomfortable situations (Hasada, 1997). These aspects of language and social culture may hide individuals’ true feelings and make individuals

more careful and sensitive to others' expressions to understand the hidden true meanings. This could explain why the "Sensitivity" factor is appropriate both for Chinese university students and Japanese adults. In addition, the necessity of "Sensitivity" can be supported in Chinese society because interpersonal relationships of Chinese individuals closely depend on their behaviors, which contribute to others' dignity in social interactions (Cheung et al., 1996). Moreover, previous research has demonstrated that considering other's dignity in social interactions is an essential capability for Chinese university students (Mao & Daibo, 2006). Therefore, the four-factor solution can be considered a reasonable factor pattern in Chinese university students, and the Cronbach's alpha coefficient also statistically indicated that this pattern had acceptable internal consistency.

3.5.3.3 Inter-factor correlations among the four factors

Inter-factor correlations showed that there are moderate correlations among the four factors, corresponding with results of previous studies that moderate correlations existed among the three identified domains. Inter-factor correlations indicate that Chinese university students can perform almost equally well in terms of different aspects of social competence. For instance, individuals who have a good assertion capability can easily control themselves in terms of appropriate behaviors when they interact assertively with others. Another point of note is the correlation

between “Sensitivity” and “Coordination.” In the social culture of China, people emphasize others’ “mianzi” (a Chinese term), which means considering others’ dignity and not making them feel humiliated. Therefore, the ability to notice others’ feelings and expressions is extremely important for Chinese university students. The moderate correlation between “Sensitivity” and “Coordination” and the social culture of China can be considered an explanation as to why “Sensitivity” was extracted as a factor; because “sensitivity” also reflects an ability to manage relationships with others.

3.5.4 Correlations with other assessments and student’s age

3.5.4.1 Correlations with SSI, ENDCOREs and AQ

The significant correlation with SSI suggested that IRSA-28, with a four-factor construct, has acceptable convergent validity to measure social competence in Chinese university students. Moreover, the significant correlations among these four factors and subscales of SSI imply that the capabilities represented by the subscales of SSI can be performed in terms of the corresponding behaviors of interactions. For example, the capabilities of EE and SE can be observed in assertion, and coordination behaviors can be reflected in the emotional and social skills of SSI.

The significant correlation with ENDCOREs supported the validity of IRSA-28. In addition, the significant correlations between the four factors

and the subscales of ENDCOREs indicated how the factors were constructed. For example, Assertion of IRSA-28 is correlated significantly with Expressivity and Assertiveness of ENDCOREs, indicating that it may be possible to separate Assertion into emotional expressivity and assertiveness, through further study with a larger sample of Chinese adults.

Autism spectrum disorders (ASD) are common developmental disorders with impaired ability of social interaction and communication (Caronna, Milunsky & Tager-Flusberg, 2008). Gerhardt and Mayville (2010) suggested one of the best methods to assess specific social behaviors for individuals with ASD is direct observation in their social environments; moreover, direct observation is effective to interpret how they perform specific social behaviors in response to social context. In this study, the significant correlation with AQ scores meant that there was a higher risk of autism in university students with lower social competence. In particular, autism was most likely among those with lower capabilities in terms of sensitivity toward a partner, assertion, and coordination. This result suggested that IRSA-28 is effective for examining potential autism tendencies among Chinese university students.

3.5.4.2 Correlation with age of university students

Among the factors of IRSA-28 and age, only the correlation with self-control was significant. One previous study indicated that individuals'

social competence may improve with age, but that study involved a wide age range of participants from 18 to 65 and did not target university students (Gao & Liu, 2006). Considering that university students are almost adults, are over 18 years old, and are not experiencing rapid development in physical and cognitive abilities, results of this study imply that the social competence of university students should be stable during the period of university. Unlike the periods before and after university, developmental factors in the lifespan, such as cognitive ability or complexity of peer relationships, do not automatically contribute to an individual's social competence; hence, specific training lessons are essential to improve the social competence of university students with deficiencies in social interactions.

3.5.5 Explanation of the reduction of items

3.5.5.1 Explanation of the reduction and reasonability of items

In this study, all IRSA items were examined by observing the behaviors of the sample of Chinese university students. The results showed that 52 items were infrequently observed in interactions among university students (lower than 5% was considered the standard to determine if an item was observed, based on the results of the descriptive analysis). In the process of the EFA, the factor patterns extracted from the retained 40 items were indeterminate. These factor patterns were just the results of the factor

analysis, and not objective factor constructs, since they could not be reasonably explained by their corresponding items. For example, as shown in Table 6, although the 40 items had acceptable factor loadings (over 0.4) in a four-factor pattern, the factors were not interpretable. The situation implied that there were problems with the data that could not be resolved by manipulating the number of factors retained, and that dropping problematic items could solve the problem (Costello & Osborne, 2005). By dropping the problematic items one-by-one and running the EFA repeatedly, an interpretable four-factor construct with 28 items was extracted, which is shown in Table 7.

IRSA was originally developed to assess social competence of Japanese adults based on behavioral observation. The 92 items of IRSA were composed based on original items by the study authors and previous assessments that have been proven effective in measuring social competence, such as Interaction Rating Scale (IRS) (Anme et al, 2010), the Social Skills Rating Systems (SSRS) (Gresham & Elliot, 1990), and ENDCOREs (Fujimoto & Daibo, 2007). The items have been examined and proven effective for measuring social competence based on behavioral observation (Anme et al, 2011; Anme et al, 2013). In this study, all items were examined again using data from Chinese university students. On one hand, since the internal consistency and convergent validity of this four-factor structure with 28 items were supported, it is inferred that the

four-factor pattern and its 28 items are suitable for Chinese university students; however, on the other hand, it is difficult to confirm that IRSA is completely suitable for this population, given that only 28 items were kept in this factor structure. The small number of items retained may be explained by the diversities between Japanese adults and Chinese university students.

3.5.5.1 Diversities in social interaction

Diversity probably affects the effectiveness of IRSA in assessing social competence of individuals with different backgrounds. These differences in interactional behaviors among racial and culture backgrounds have been discussed in previous studies. For instance, in American society, Caucasian Americans usually perform nods and verbal cues as obvious indicators of attentiveness in communications, but African Americans do not always use such body and verbal performance as signs of listening (Dubner, 1972). In addition, Caucasian Americans use more direct eye contact when speaking (Pennington, 1979), and African Americans present more affective expressivities and quick responses during conversations (Sue & Sue, 2003). Within Asian culture, such as Chinese culture, it is few to use bodily contact during social interactions (Argyle, 1975), because many forms of bodily contact are intimate actions that usually would be performed only either in strict privacy or particular situations among close family members

(Shun-Chiu, 1997). In the culture of Japan, Japanese people tend to not express their negative emotions and usually try to use smile and laugh to avoid presenting negative emotion in uncomfortable situations (Argyle, 1975). In addition, in Japanese culture, avoidance of eye contact should not be considered as shyness, but an expression of respect (Hasada, 1997).

Even though Japan and China are considered to have similar Asian cultures, diversities in interactional performance also exist. For example, regarding nonverbal communication, Chinese individuals use body language such as pouting or thumping to express anger, but in Japan, putting a fist above the head is usually an expression of anger. In addition, extending a thumb and pinky finger is an inelegant representation of male and female in Japanese culture, but this gesture means evaluation of good and bad in Chinese society (Li & He, 2011). Regarding verbal communication, although Japanese and Chinese languages are both capable of expressing feelings and meaning, Japanese individuals are more restrained and euphemistic in expressions than Chinese individuals (Liu, 2009). For example, Japanese individuals always avoid expressing rejection directly, tend to use modest words to deliver their opinions, and emphasize differences in expressions between men and women (Sang, 2009).

Therefore, although IRSA contained essential items that can reflect appropriate behaviors of Chinese university students in their social

interactions, items of IRSA that were infrequent due to diversities in racial and social culture should be modified. Furthermore, the sample size should be enlarged to ensure that more behaviors can be observed in social interactions.

3.6 Conclusion

IRSA-28 with a four-factor structure and 28 items has acceptable reliability and validity, indicating that IRSA has the potential to assess social competence in Chinese university students. The fourth factor, “Sensitivity,” may be essential for assessing social competence in China, as well as the other three factors, “Assertion,” “Coordination” and “Self-control”. The four-factor structure support that the three-domain was suitable for Chinese university students. However, the items and constructs of IRSA-28 should be modified through further studies to provide a complete perspective on social competence in China.

Chapter 4 Summary

4.1 Originality

This study reflects the first review of the social competence of adults and university students in China, and the first assessment of social competence verified for Chinese university students based on behavioral observations. The originalities are as follows.

First, Part 1 identified common elements in definitions of social competence and distinguished the terms for social competence and social skills those are used in China, so that future research could utilize these terms precisely. Moreover, it not only provided an understandable category to classify current assessments, but also indicated that interventions for social skills training designed for patients with severe mental illness could not target deficits in social skills, and thus, improvements could not described clearly. Second, Part 2 verified an assessment of social competence based on behavioral observation, thereby enriching multiple perspectives for evaluating social competence of university students in China. Third, it was documented that the three domains, “Assertion,” “Coordination,” and “Self-control,” were suitable to measure social competence of Chinese university students, and implied that more factors may exist in terms of the construct of social competence within the Chinese social context.

4.2 Limitations

The limitations of this study must be addressed. First, most previous studies of social competence described the construct from different perspectives and did not describe approaches to define it. Therefore, Part 1 of this study could not provide an understandable and unified definition of social competence in Chinese social contexts.

Second, the size of the sample and interaction of the game might restrict Part 2 in terms of developing further precise and detailed assessments. In this study, many items of IRSA were eliminated, resulting from steps of the analysis. In the item collection step, 52 items were dropped in the descriptive analysis based on the results of observation. Even though a standard of 5% was used to identify items for subsequent factor analyses and to keep as many items as possible, loss of information and differences in items were inevitable. If possible, the standard should be lower or even zero. In addition, after the factor analysis, another 12 items were statistically eliminated because of limited data. Although the retained 28 items and four-factor pattern were statistically reliable and valid, it is probable that the dropped items were usable for Chinese university students..

Third, although the game called “Keep it steady” is feasible for university students, it may limit to creating complete social interaction among them because the game was developed for children with easy rules.

Therefore, the game should involve more players and be more complex and appropriate to be able to create complete social interaction for Chinese university students. However, researchers should carefully plan behavior observation in terms of the ethical issue. Researchers must gain consent for study participation. They also should note the possibility of having a bias because university students' interactional behaviors may be affected if they are noticed their interactions will be recorded and evaluated by observers. It is also considerable to apply the findings to development of other methods, such as self-report and others-evaluation. Fourth, this study is not a verification study of the Chinese version of the IRSA. The findings of this study should be verified using the Chinese version of the IRSA.

4.3 Significance

4.3.1 Contribution to the evaluation of social competence in university students

Currently, the system to evaluate social competence in university students is not completely constructed in China. Since the existing studies focused on social competence of university students are inadequate, there were few studies to unify the definitions and constructs of social competence within the social context of China. Therefore, it was not possible to provide a valid approach to evaluate social competence in Chinese university students. For example, researchers developed appropriate assessments based on the different definitions and constructs proposed, and some studies also examined the social competence of university students with these assessments in large samples, but the relationships among definitions, constructs, and assessments were not explained. In addition, skills acquisition and skills performance were not assessed together. However, deficits in social competence can be shown to result from a failure in acquisition or an insufficient ability to perform learned skills appropriately (Elliott, Gresham & Heffer, 1987; Merrell & Gimpel, 1998). The existing evaluations have been based on self-report and assessed perceived social competence, such as asking individuals or peers about individuals' social competence, rather than understanding how

individuals perform their skills in interactions. Therefore, it is difficult to evaluate social competence with valid approaches containing definitions, constructs, and skills performance.

This study clarified the associations among the definitions, constructs, and IRSA, therefore providing an objective explanation for assessing social competence with IRSA-28. Moreover, researchers can rate individuals' social competence in social interactions with IRSA-28 based on behavioral observations to evaluate the acquisition and performance of social competence together. Thus, researchers can measure social competence in university students with IRSA-28 and combine it with existing assessments to provide a valid approach to systematically evaluate social competence.

4.3.2 Contribution to school nursing in university students via social competence

As discussed in Part 1, previous studies did not provide professionals with systematic approaches for university students who had insufficient social skills. Furthermore, existing assessments were not sufficient when professionals assess the social competence of university students using objective judgments. In school nursing for mental health and behaviors in university students, nursing professionals need to precisely understand interactional behaviors and exact construct of capability so that can help students to improve interactional skills and mental health with appropriate

care. This study provided nursing professionals suggestions about interventions for social competence by referring to previous global studies. More importantly, this study did not only provide nursing professionals with a valid assessment to assess social competence based on their observations of students' behaviors in social interactions but also introduced a four-factor pattern to assist professionals in understanding social competence.

Using IRSA-28 in school nursing for social competence, nursing professionals can understand the construct of capabilities and exact behaviors in social competence; moreover, they can become competent to provide targeted care in assessing social competence of students with their objective observations while avoiding the influence of their subjective emotions. For instance, for students with mental health problems (such as anxiety about interpersonal relationships), nursing professionals can create an interactional environment (such as by using games that may engage students in social interaction) and use IRSA-28 to assess students' performance. As such, they will be able to understand the detailed status of social competence (such as if individuals express their opinions definitely, or if individuals correctly recognize others' meanings and respond with appropriate behaviors), and these details are useful to help students with targeted care. In addition, as discussed in the section on definitions, if smaller and simpler behaviors are employed as units of analysis, it is

possible that social competence is no longer reflected as reality; therefore, a valid factor pattern is needed to systematically combine precise behaviors. The four-factor pattern provides nursing professionals with comprehensive perspectives to understand social competence, instead of simply identifying behaviors. For example, nursing professionals can not only determine which behaviors are absent or inappropriate based on observations (such as lack of attention to others' facial expressions and gestures, obvious displays of negative feelings) but also can systematically combine behaviors to understand problems of social competence (such as lack of sensitivity or inappropriate behaviors in terms of self-control).The exact items and four-factor pattern would be both important and helpful to design precise and targeted care for individuals with different problems regarding social competence.

Furthermore, multiple measures, including IRSA-28 and other assessments, are suggested as preferred methods to evaluate social competence in Chinese university students. For example, currently, many universities have started courses for improving interpersonal and interviewing skills. These courses provide natural interactional environments for university students. Nursing professionals can use self-report questionnaires for social competence to assess students' performances and use cameras to record the performances in class. However, for individuals who need more privacy or are difficult to interact

with others in pubic, a combination of IRSA-28 and a clinical interview may be preferred for nursing professionals to understand individuals' problems and provide appropriate interventions. This IRSA-28 would be contributive to exploit appropriate care for individuals with considering their personalities.

As indicated in many studies, social competence is related to students' mental health and development, such as social anxiety, loneliness, academic achievement, and future careers. This study would promote nursing professionals in understanding of social competence; therefore, it should contribute in preventing mental health and solving behavioral disorder in development among university students via view of social competence.

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Figures

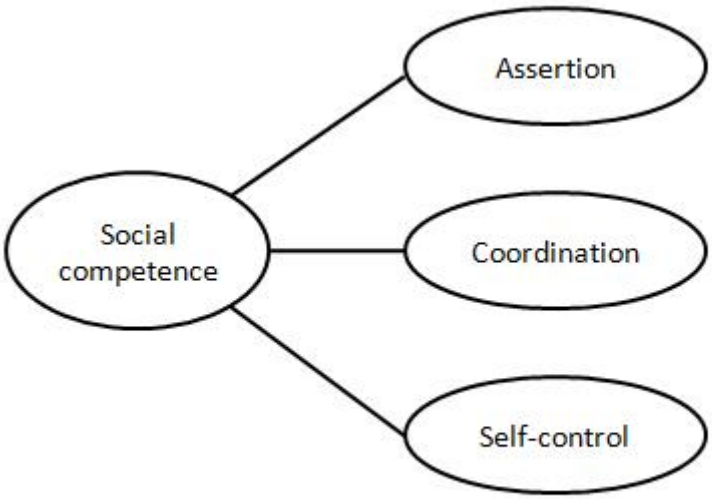

Figure 1. The Three-domain Construct of Social competence

(Modified from Gresham & Elliot, 1990; Caldarella & Merrell, 1997; Elikskin LK & Elikskin N, 1998)

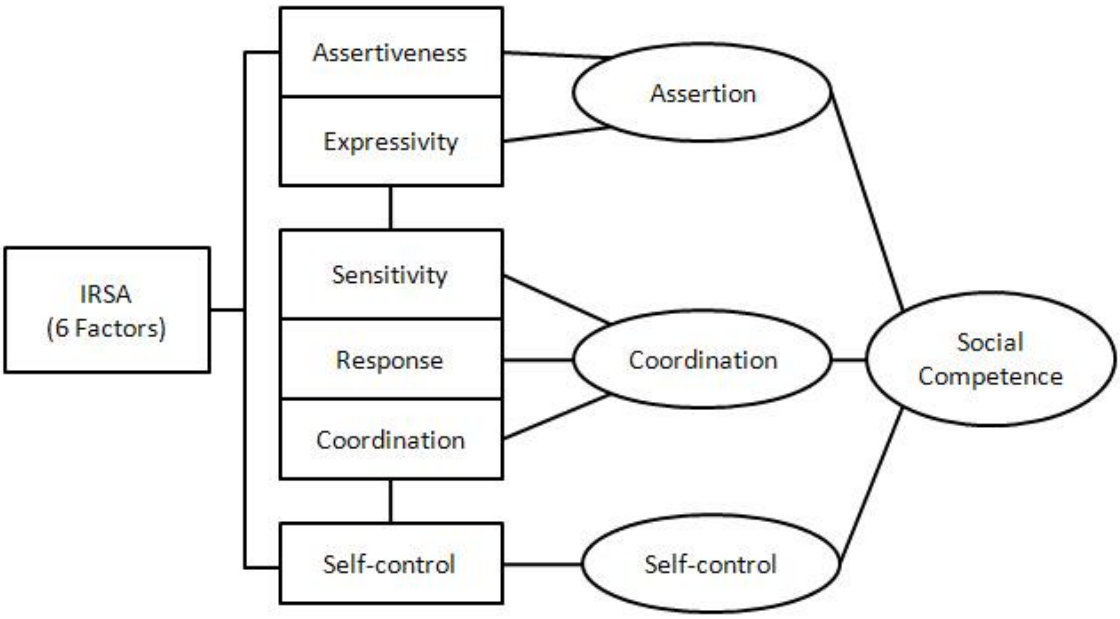

Figure 2. IRSA and Construct of Social Competence

(Modified from Anme et al, 2011)

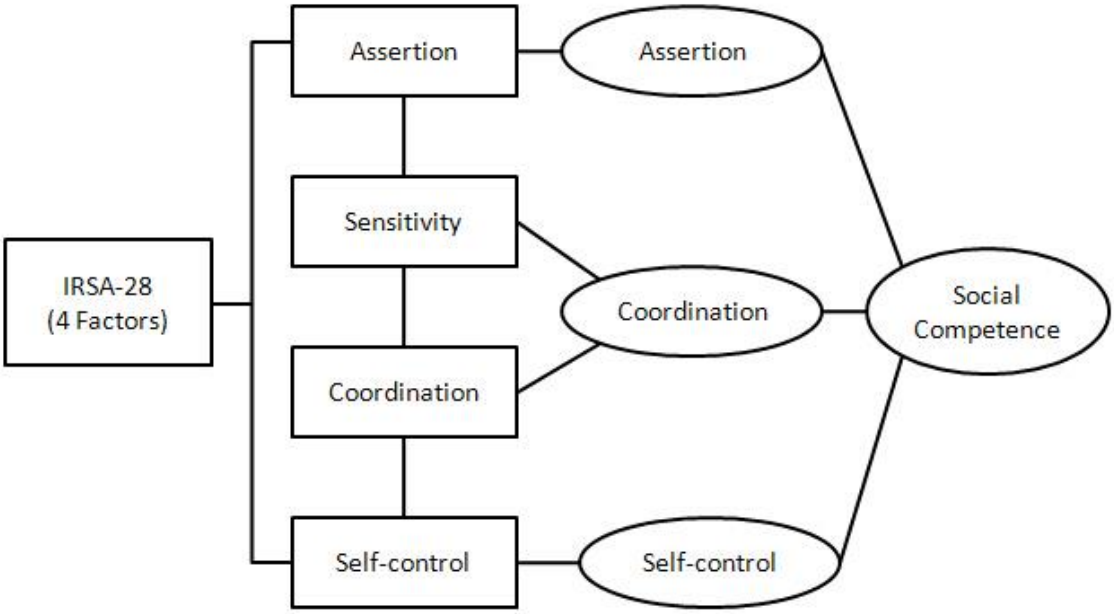

Figure 3. IRSA-28 and Construct of Social Competence

Tables

Table 1. Definitions of Social Competence proposed in China

Authors	Definitions
Cao, et al. (2009)	Capability of individual which interact with others in aspect of interpersonal relationship
Chen Bin-bin, et al. (2011)	Effective ability of communication in social interaction with peers including sociability, prosocial behavior, autonomy.
Fang, et al. (2009)	A series of ability of graduate student which acquired in advanced education and represent individual's sociability, including 1)understanding and keeping social rules, 2)using social skills, 3)forming social value, 4)social cognition, 5)improving judgment and involving into society
Liang, et al. (2012)	Capability of interpersonal relationship which lead to success in social contexts, especially initiative and appropriate behavior in social interaction.
Liu & Zou (2005)	A ability of individual which could response to social environment effectively and appropriately to advance individual's development
Liu & Gao (2004)	Capability of individual to adapt social environment effectively, and take appropriate judgment and behavior in work, study, and social interaction.
Mao & Daibo (2006)	Useful ability to reach good interpersonal relationship
Qin & Huang (2001)	A behavioral model of individual could affect and manipulate others to make an advantageous situation
Wang & Yu (2006)	A subjective judgment to specific social behaviors basing on certain social standards
Yu, et al. (2012)	Ability to coordinate adaptively in psychological and physical for having a better life in society, and change in behavior according to the coordination

Zhang Lei, et al. (2011)	Capability of individual which required by learning and interact with others appropriately in social contexts, is made of receiving, explaining, and controlling social information
Zhang Xiao (2011)	A series of Basic ability required in social interaction and interpersonal relationship, including autonomy, understanding, coordination, communication with peers, abidance by social rules
Zhou, et al.(2006)	Effectiveness of social interaction in social relationship and social contexts

Table 2. The assessments to measure social competence (social skills)

Authors	Assessments	Information sources
Cao, et al. (2009)	Social Skills Inventory (SSI)	Self-report
Liu & Gao (2004)	Adult Intelligence Disability Assessment Scales	Clinic interview
	Social Disability Screening Schedule (SDSS)	Clinic interview
Liu & Gao (2005)	Rating Scale of Social Ability (RSSA)	Others-evaluation
Mao & Daibo (2006)	Chinese University-students Social Skill Inventory (ChUSSI)	Self-report
Liu & Zou (2005)	Social Competence Questionnaire for Undergraduate Students	Self-report
Zhuang, et al. (2004)	Social Skills Scale (SSS)	Self-report

Table 3. Intervention for individuals with Schizophrenia

Authors	Intervention: Social Skills Training	samples	Standard of examination
Cui, et al. (2004)	Social and independent Living Skills (Liberman, 1996)	Training group: 45 Control group: 46	BPRS, SANS, SDSI, WCST
Huang, et al. (2003)	exercise of social skill, role-play , and simulating situation exercise	Training group: 24 No Control group	SANS
Huang, et al. (2005)	Speaking, solving problem, role-play, music performance, sports competition in door, and excursion outdoor	Training group: 33 Control group: 34	SANS,SSPI
Zhang, et al. (2011)	Social and independent Living Skills (Liberman, 1996)	Training group: 41 Control group: 43	MRSS, PANSS, ITAQ
Zhang, et al. (2006)	Group psychotherapy, and individual psychotherapy	Training group: 50 Control group: 50	BPRS

BPRS: The Brief Psychiatric Rating Scale

SANS: The Scale for the Assessment of Negative Symptoms

SDSI: Social Disability Screening Schedule for inpatient

WCST: Wisconsin Card Sorting Test

SSPI: Scale of Social function for Psychosis Inpatients

MRSS: Morning Side

PANSS: Positive and Negative Syndrome Scale

ITAQ: Insight and Treatment Attitudes Questionnaire

Table 4. The participants' information of native place and gender

Number of participants	Gender	Native place (Province and Municipality in China)	Area
3	Male	Chongqing	
6	Female		
2	Male	Guangxi	
3	Female		
0	Male	Hubei	
3	Female		
2	Male	Hunan	West
4	Female		
4	Male	Sichuan	
7	Female		
0	Male	Yunnan	
2	Female		
2	Male	Fujian	
3	Female		
2	Male	Guangdong	
2	Female		
1	Male	Liaoning	
1	Female		East
0	Male	Shandong	
2	Female		
3	Male	Shanghai	
4	Female		
0	Male	Unclear	
2	Female		
Total	**West areas**	36: Male 11, Female 25	
	East areas	20: Male 8, Female 12	
	Unclear	2: Male 0, Female 2	

Table 5. The results of descriptive analysis of coding scores

92 Items of IRSA	Coding Score							
	1		2		3		4	
	n	%	n	%	n	%	n	%
1. Expressivity: Expresses his/her thoughts and feelings precisely								
1) Vocalizes	0	0%	0	0%	3	5%	55	95%
2) Expresses his/her own feeling to the partner	0	0%	0	0%	3	5%	55	95%
3) Attempts to elicit help or consolation from the partner	55	95%	0	0%	3	5%	0	0%
4) Shows self-assertiveness to the partner through a gesture	0	0%	9	16%	27	47%	22	38%
5) Casts the partner a glance to seek sympathy	2	3%	3	5%	30	52%	23	40%
6) Shows the change of his/her feelings through facial expressions	0	0%	2	3%	1	2%	55	95%
7) Smiles or laughs	0	0%	2	3%	1	2%	55	95%
8) Attempts to make eye contact with the partner	1	2%	6	10%	26	45%	25	43%
9) Attempts to elicit a response from the partner	0	0%	7	12%	23	40%	28	48%
10) Looks at the partner's face to get information/clarification	56	97%	1	2%	1	2%	0	0%
11) Shows his/her feelings by words and actions together	55	95%	0	0%	3	5%	0	0%
2. Assertiveness: States his/her opinion or position clearly to others								
12) Speaks up to the partner about what he/she thinks	1	2%	2	3%	0	0%	55	95%
13) There are words and actions indicate his/her decision	0	0%	0	0%	3	5%	55	95%

14) Talks to, suggests or lets the partner accomplish something while he/she gives the attention	57	98%	0	0%	1	2%	0	0%
15) Expresses his/her opinion to the partner	1	2%	2	3%	0	0%	55	95%
16) Verbalizes a differing opinion or position	55	95%	0	0%	3	5%	0	0%
17) Exhibits a differing opinion by his/her expression & gestures	1	2%	6	10%	20	34%	31	53%
18) Uses both verbal descriptions and non-verbal instruction	0	0%	8	14%	21	36%	29	50%
19) Provides guidance through explanation but not through order	0	0%	2	3%	1	2%	55	95%
20) Explains his/her opinion based on the level of competence/ability of the partner	55	95%	0	0%	3	5%	0	0%
21) Instructions and opinions are clear and unambiguous	55	95%	2	3%	1	2%	0	0%
22) Explains his/her opinion logically	3	5%	4	7%	28	48%	23	40%
23) Expresses his/her own idea after evidencing that he/she understands the partner's idea	0	0%	7	12%	23	40%	28	48%
24) Expresses his/her ideas after indicating his/her understanding to the partner through expression & gesture	2	3%	4	7%	20	34%	32	55%
25) Makes a decision after indicating that he/she understood the partner's idea/suggestion	1	2%	6	10%	24	41%	27	47%
26) Makes a decision after showing through non-verbal expression that he/she understood the partner	1	2%	4	7%	20	34%	32	55%
3. Sensitivity: Ability to read the partner's feelings and thoughts accurately								
27) Shows an appropriate reaction by a change in expression & gesture	0	0%	0	0%	3	5%	55	95%
28) Vocalizes or speaks in response to the partner's verbalization.	1	2%	7	12%	25	43%	25	43%
29) Vocalizes or adjusts own behavior in response to partner's verbalization.	0	0%	9	16%	23	40%	26	45%

30) Looks at the partner or materials when he/she shows non-verbal behavior.	0	0%	8	14%	26	45%	24	41%
31) Vocalizes in response to the partner's behavior or nonverbal cues	1	2%	6	10%	20	34%	31	53%
32) Babbles, makes a facial expression, or moves in response to the partner's behavior or a nonverbal cues	1	2%	7	12%	23	40%	27	47%
33) Vocalizes after noticing the changes in the facial expression of the partner.	1	2%	6	10%	22	38%	29	50%
34) Looks at the partner or materials after noticing the changes in the facial expression of the partner.	0	0%	9	16%	24	41%	25	43%
35) Vocalize, expresses or moves based to the change in partner's expression.	1	2%	5	9%	20	34%	32	55%
36) Smiles or frowns within five seconds after the partner's vocalization.	0	0%	0	0%	3	5%	55	95%
37) Looks at the partner's face or eyes when the partner attempts eye contact.	0	0%	8	14%	30	52%	20	34%
38) Behaves in appropriate response to the partner's gestures, or changes in expression.	55	95%	0	0%	3	5%	0	0%
4. Acceptance: Understands and respects the partner's opinion or position								
39) Smiles in response to the partner's smile.	1	2%	2	3%	0	0%	55	95%
40) Praises the partner's efforts, success, and behavior.	56	97%	2	3%	0	0%	0	0%
41) Smiles, claps hands, or show he/she is glad when the partner is feeling happy.	1	2%	6	10%	26	45%	25	43%
42) Shows empathy by verbal or non-verbal response when the partner is in a bad mood.	2	3%	1	2%	31	53%	24	41%
43) Emits positive, sympathetic, or soothing verbalizations in answer to the partner's feeling.	0	0%	7	12%	26	45%	25	43%

44) Responds to the partner's vocalizations with an affectionate verbal response.	0	0%	2	3%	1	2%	55	95%
45) Smiles at partner's verbalization.	2	3%	3	5%	30	52%	23	40%
46) Nods sweetly in response to partner's verbalizations and/or actions	56	97%	2	3%	0	0%	0	0%
47) Emits a soothing non-verbal response (i.e. pat, touch, rock) at the partner's successful or fails.	55	95%	1	2%	2	3%	0	0%
48) Smiles and/or nods at the partner during the episode.	56	97%	2	3%	0	0%	0	0%
49) Does not vocalize or interrupt the partner while he/she is speaking.	0	0%	2	3%	1	2%	55	95%
50) Nods at partner's comment	56	97%	2	3%	0	0%	0	0%
51) Accepts the partner's opinion partially or totally by saying "let's do it or by acting in a manner consistent with the partner's suggestion.	1	2%	4	7%	27	47%	26	45%
52) Accepts the partner's opinion even when his/her own opinion differs.	0	0%	8	14%	21	36%	29	50%
53) Pauses when the partner starts to verbalize.	3	5%	4	7%	28	48%	23	40%
54) Does disturb the partner.	0	0%	0	0%	3	5%	55	95%
55) Allows the partner to decide what he/she wants to do.	0	0%	1	2%	1	2%	56	97%
56) Praises partner's skills in the course of assignment.	56	97%	2	3%	0	0%	0	0%
5. Regulation of the interpersonal relationship: Works with the partner to develop a good relationship								
57) Provides an environment free of distractions for the partner.	1	2%	2	3%	0	0%	55	95%
58) Does not make negative comments to the partner.	1	2%	10	17%	22	38%	25	43%
59) Does not make negative behavior to the partner.	1	2%	2	3%	0	0%	55	95%

60) Affirms the partner with nods or other gestures.	55	95%	0	0%	3	5%	0	0%
61) Laughs while they are looking at each other.	0	0%	2	3%	1	2%	55	95%
62) Laughs while they are looking at the same thing.	1	2%	2	3%	0	0%	55	95%
63) Moves in the same manner as the partner moves.	0	0%	3	5%	26	45%	29	50%
64) Does not turn away from the assignment and pays close attention to the partner.	0	0%	9	16%	24	41%	25	43%
65) Verbally praises the partner during the assignment.	56	97%	2	3%	0	0%	0	0%
66) Praises the partner with applause.	55	95%	1	2%	2	3%	0	0%
67) Talks to the partner positively or encouragingly during the assignment.	1	2%	2	3%	24	41%	31	53%
68) Says "Thank you" to the partner when he/she grants a concession.	0	0%	0	0%	3	5%	55	95%
69) Does not criticize the partner when they have differing opinions.	0	0%	0	0%	3	5%	55	95%
70) Tries to talk with the partner logically when they have differing opinions.	0	0%	0	0%	3	5%	55	95%
71) Tries to avoid emotional conflicts with the partner.	0	0%	0	0%	3	5%	55	95%
72) Tries to respond calmly when the partner becomes angry or agitated.	0	0%	0	0%	3	5%	55	95%
6. Self-control: Ability to control personal emotions and behaviors								
73) Waits for the partner's reaction or action for at least five seconds.	1	2%	7	12%	23	40%	27	47%
74) Emits appropriate movement of eyes.	0	0%	8	14%	26	45%	24	41%
75) Emits appropriate phonation.	0	0%	2	3%	1	2%	55	95%
76) Emits appropriate utterances.	0	0%	2	3%	1	2%	55	95%

77) Emits appropriate movements.	1	2%	2	3%	0	0%	55	95%
78) Makes clearly recognizable hand motions towards materials during the assignment.	0	0%	2	3%	1	2%	55	95%
79) Concentrates on the task and is gentle with the materials.	1	2%	10	17%	22	38%	25	43%
80) Does not interrupt partner's implementation.	2	3%	1	2%	31	53%	24	41%
81) Is not destructive/rough with the materials.	0	0%	2	3%	1	2%	55	95%
82) Not tense.	0	0%	8	14%	23	40%	27	47%
83) Does not shout or raise his/her voice.	0	0%	2	3%	1	2%	55	95%
84) Does not display distress cues even when the task does not go well.	0	0%	1	2%	1	2%	56	97%
85) Is not rude to the partner.	0	0%	2	3%	1	2%	55	95%
86) Tries not to displease the partner.	1	2%	6	10%	22	38%	29	50%
87) Does not speak negatively of others.	0	0%	7	12%	26	45%	25	43%
88) Does not curse at people or at things.	0	0%	2	3%	1	2%	55	95%
89) Follows the rules of the game.	2	3%	9	16%	21	36%	26	45%
90) Touches a task together.	0	0%	0	0%	3	5%	55	95%
91) Emits appropriate emotional expression.	4	7%	8	14%	30	52%	16	28%
92) Praises the partner when he/she succeeds, or when the partner fails he/she commiserates.	57	98%	1	2%	0	0%	0	0%

Table 6. The one of results from EFA (40 items and four factors)

Items	Factor 01	Factor 02	Factor 03	Factor 04
Factor 01:				
31)Vocalizes in response to the partner's behavior or nonverbal cues	**0.86**	-0.08	0.11	0.07
17)Exhibits a differing opinion by his/her expression & gestures	**0.83**	-0.04	0.13	0.03
33)Vocalizes after noticing the changes in the facial expression of the partner	**0.78**	0.01	0.15	0.07
32)Babbles, makes a facial expression, or moves in response to the partner's behavior or a nonverbal cues	**0.76**	0.11	0.01	0.11
73)Waits for the partner's reaction or action for at least five seconds	**0.75**	0.13	0.11	0.01
28)Vocalizes or speaks in response to the partner's verbalization	**0.71**	0.15	0.07	0.09
35)Vocalize, expresses or moves based to the change in partner's expression	**0.63**	-0.02	0.15	0.20
29) Vocalizes or adjusts own behavior in response to partner's verbalization	**0.59**	0.11	0.01	0.32
86) Tries not to displease the partner	**0.59**	0.11	0.23	0.13
37)Looks at the partner's face or eyes when the partner attempts eye contact	**0.55**	0.25	-0.08	0.27
09)Attempts to elicit a response from the partner	**0.46**	0.27	-0.14	0.29
51) Accepts the partner's opinion partially or totally by saying "let's do it or by acting in a manner consistent with the partner's suggestion	**0.41**	0.25	0.34	-0.12
Factor 02:				
18)Attempts to make eye contact with the partner	-0.19	**0.99**	0.06	0.08
08)Attempts to make eye contact with the partner	0.22	**0.86**	-0.06	-0.06
04)Shows self-assertiveness to the partner through a gesture	0.08	**0.85**	-0.08	0.12
52)Accepts the partner's opinion even when his/her own opinion differs	-0.08	**0.83**	0.06	0.18
26)Makes a decision after showing through non-verbal expression that he/she understood the partner	0.02	**0.77**	0.23	-0.02
24)Expresses his/her ideas after indicating his/her understanding to the partner through expression & gesture	-0.05	**0.75**	0.36	-0.10
23)Expresses his/her own idea after evidencing that he/she understands the partner's idea	0.29	**0.72**	-0.08	0.02
25)Makes a decision after indicating that he/she understood the partner's idea/suggestion	0.29	**0.64**	-0.07	0.12
22)Explains his/her opinion logically	0.18	**0.63**	0.21	0.05

53)Pauses when the partner starts to verbalize	0.16	**0.43**	-0.04	0.25
Factor 03:				
05)Casts the partner a glance to seek sympathy	0.06	-0.05	**0.84**	0.00
45)Smiles at partner's verbalization	-0.01	0.09	**0.84**	-0.07
43)Emits positive, sympathetic, or soothing verbalizations in answer to the partner's feeling	-0.03	-0.03	**0.77**	0.33
87)Does not speak negatively of others	-0.01	-0.02	**0.74**	0.36
41)Smiles, claps hands, or show he/she is glad when the partner is feeling happy.	0.19	-0.11	**0.69**	0.21
63)Moves in the same manner as the partner moves	0.19	0.15	**0.60**	-0.03
42)Shows empathy by verbal or non-verbal response when the partner is in a bad mood	0.28	0.18	**0.52**	-0.14
67)Talks to the partner positively or encouragingly during the assignment	0.48	0.09	**0.49**	-0.26
80) Does not interrupt partner's implementation	0.22	0.31	**0.43**	0.03
Factor 04:				
82)Not tense	-0.01	-0.07	0.02	**0.93**
74)Emits appropriate movement of eyes	-0.10	0.06	0.14	**0.89**
79)Concentrates on the task and is gentle with the materials	0.14	0.01	-0.11	**0.88**
64)Does not turn away from the assignment and pays close attention to the partner	-0.12	0.20	0.08	**0.86**
34)Looks at the partner or materials after noticing the changes in the facial expression of the partner	-0.09	0.18	0.09	**0.82**
58)Does not make negative comments to the partner	0.18	0.07	-0.08	**0.82**
89) Follows the rules of the game	0.32	-0.20	-0.04	**0.80**
30) Looks at the partner or materials when he/she shows non-verbal behavior	0.08	0.21	0.04	**0.68**
91) Emits appropriate emotional expression	0.31	0.01	0.04	**0.65**

Table 7. Reconstruction of IRSA for adapting in Chinese university students

Items	Factor 01	Factor 02	Factor 03	Factor 04
Factor 01: Sensitivity (Average Inter-item Correlation = 0.96)				
01)Babbles, makes a facial expression, or moves in response to the partner's behavior or a nonverbal cues	**0.79**	0.11	0.04	0.06
02)Vocalizes or speaks in response to the partner's verbalization	**0.77**	0.14	0.07	0.05
03)Vocalizes in response to the partner's behavior or nonverbal cues	**0.76**	-0.06	0.20	0.06
04)Vocalizes after noticing the changes in the facial expression of the partner	**0.73**	0.02	0.22	0.05
05)Vocalizes or adjusts own behavior in response to partner's verbalization	**0.66**	0.10	0.01	0.27
06)Looks at the partner's face or eyes when the partner attempts eye contact	**0.64**	0.25	-0.10	0.20
07)Vocalize, expresses or moves based to the change in partner's expression	**0.59**	-0.02	0.22	0.19
Factor 02: Assertion (Average Inter-item Correlation = 0.95)				
08)Uses both verbal descriptions and non-verbal instruction	-0.16	**0.95**	0.05	0.09
09)Attempts to make eye contact with the partner	0.20	**0.86**	-0.03	-0.079
10)Shows self-assertiveness to the partner through a gesture	0.11	**0.86**	-0.10	0.11
11)Makes a decision after showing through non-verbal expression that he/she understood the partner	-0.03	**0.77**	0.277	0.01
12)Expresses his/her ideas after indicating his/her understanding to the partner through expression & gesture	-0.10	**0.76**	0.36	-0.05
13)Expresses his/her own idea after evidencing that he/she understands the partner's idea	0.26	**0.73**	-0.05	0.02
14) Explains his/her opinion logically	0.14	**0.65**	0.23	0.06
15)Makes a decision after indicating that he/she understood the partner's idea/suggestion	0.33	**0.62**	-0.04	0.08
Factor 03: Coordination (Average Inter-item Correlation = 0.92)				
16)Smiles at partner's verbalization	-0.11	0.12	**0.80**	0.03
17)Smiles, claps hands, or show he/she is glad when the partner is feeling happy	0.11	-0.12	**0.73**	0.26
18)Moves in the same manner as the partner moves	0.09	0.13	**0.69**	0.02
19)Emits positive, sympathetic, or soothing verbalizations in answer to the partner's feeling	-0.04	-0.01	**0.69**	0.38
20)Talks to the partner positively or encouragingly during the assignment	0.36	0.03	**0.66**	-0.22
21)Shows empathy by verbal or non-verbal	0.23	0.09	**0.62**	-0.10

response when the partner is in a bad mood 22)Accepts the partner's opinion partially or totally by saying "let's do it or by acting in a manner consistent with the partner's suggestion	0.36	0.19	**0.47**	-0.10
Factor 04: Self-Control (Average Inter-item Correlation = 0.96)				
23)Not tense	-0.05	-0.02	0.03	**0.94**
24)Emits appropriate movement of eyes	-0.06	0.10	0.08	**0.87**
25)Concentrates on the task and is gentle with the materials	0.17	0.04	-0.11	**0.83**
27)Does not turn away from the assignment and pays close attention to the partner	-0.06	0.23	0.03	**0.83**
28)Follows the rules of the game	0.29	-0.16	-0.01	**0.79**
28)Emits appropriate emotional expression	0.33	0.04	0.03	**0.63**

Cronbach's alpha = 0.97
Factor contribution = 80%

Table 8.Inter-Factor Correlations

	Sensitivity	Assertion	Coordination	Self-Control
Sensitivity		0.60	0.57	0.55
Assertion	0.60		0.49	0.56
Coordination	0.57	0.49		0.43
Self-Control	0.55	0.56	0.43	

Table 9. The correlations of scores among SSI and IRSA-28

	EE	**ES**	**EC**	**SE**	**SS**	**SC**	**SSI**
Sensitivity	0.33	0.48**	0.44	0.48	0.53**	0.36	0.48**
Assertion	0.57***	0.38	0.39*	0.45*	0.37	0.35*	0.50**
Coordination	0.42*	0.22	0.46*	0.36	0.30	0.28	0.42**
Self-Control	0.39	0.33	0.40**	0.34	0.32	0.43**	0.41**
IRSA-28	0.50**	0.44**	0.42**	0.40**	0.48**	0.43**	0.45**

Coefficient of Pearson correlation
*p<0.1, **p <0.05, ***p <0.01

Table 10. The correlations of scores among and ENDCORESs and IRSA-28

	Self-control	Expressivity	Decipher ability	Assertiveness	acceptance	Regulation	ENDCORESs
Sensitivity	0.38**	0.40**	0.24**	0.49***	0.36**	0.30*	0.53***
Assertion	0.47***	0.37**	0.34*	0.49***	0.37**	0.41**	0.61***
Coordination	0.39**	0.47***	0.25	0.52***	0.25	0.38**	0.56***
Self-Control	0.52***	0.44***	0.33*	0.56***	0.44***	0.53***	0.69***
IRSA-28	0.49***	0.47***	0.33*	0.57***	0.41***	0.41**	0.57***

Coefficient of Pearson correlation

*p<0.1, **p <0.05, ***p <0.01

Table 11.The correlations of scores among AQ and IRSA-28

	Sensitivity	Assertion	Coordination	Self-Control	IRSA-28
AQ	-0.41**	-0.49**	-0.44*	-0.32	-0.42**

Coefficient of Pearson correlation

*p<0.1, **p <0.05, ***p <0.01

Table 12.The correlations of scores among age and IRSA-CU

	Sensitivity	Assertion	Coordination	Self-Control	IRSA-CU
Age	0.20	0.23	0.20	0.28**	0.25

Coefficient of Spearman correlation
**p<0.05

Appendices
(01 - 08)

Appendix 01: Interaction Rating Scales Advanced

NO.1

【観察日　　年　　月　　日】　【ID　　】　【観察者　　】

領域【6】　：5件法による印象評定（1．－－　2．－　3．±　4．＋　5．＋＋）
領域項目【24】：5件法による印象評定（1．－－　2．－　3．±　4．＋　5．＋＋）
行動項目【92】：生起を4件法で評定する（0回、不明瞭、1回、2回以上）
　頻度で測れないものは強度で測ることとする（－、±、＋、＋＋）

V＝逆転項目

		備考
1．表現力：自分の考えや気持ちをうまく表現する	1．2．3．4．5	
（1）自分の考えを言葉でうまく表現する	1．2．3．4．5	
1)　課題道具を見ながら相手に向かって発声、もしくは発話をする。	├─┼─┼─┤	
2)　（相手に対して）自分の考えを表す発言がある（否定的、肯定的問わず）。	├─┼─┼─┤	
3)　相手に言葉を用いて助けやなぐさめを求める。	├─┼─┼─┤	
（2）自分の気持ちをしぐさでうまく表現する	1．2．3．4．5	
4)　相手に対してしぐさによる自己主張がみられる。	├─┼─┼─┤	
5)　共感を求めて相手に視線を向ける。	├─┼─┼─┤	
（3）自分の気持ちを表情でうまく表現する	1．2．3．4．5	
6)　気持ちの変化を表情によって表現する	├─┼─┼─┤	
7)　課題中に自然な微笑み、笑顔がみられる	├─┼─┼─┤	
（4）自分の感情や心理状態を正しく察してもらう	1．2．3．4．5	
8)　自発的に目を合わせようとする。	├─┼─┼─┤	
9)　相手からの応答を主体的にひきだそうとする。	├─┼─┼─┤	
10)　相手に視線を向けて参照視する。	├─┼─┼─┤	
11)　自分の気持ち（感情）や考えを、言葉やしぐさを併用して効果的に用いている。	├─┼─┼─┤	
2．自己主張：自分の意見や立場を相手に受け入れてもらえるように主張する	1．2．3．4．5	
（5）会話の主導権を握って話を進める	1．2．3．4．5	
12)　課題遂行中、自ら相手に提案する発言がある。	├─┼─┼─┤	
13)　課題遂行中、自らものごとを決定する発言、しぐさがある	├─┼─┼─┤	
14)　相手の注意が向いているときに自ら話し合い、提案し、相手が遂行する。	├─┼─┼─┤	
（6）相手とは関係なく自分の意見や立場を明らかにする	1．2．3．4．5	
15)　相手に対して自分の考えを述べる。	├─┼─┼─┤	
16)　課題遂行中、相手と異なる意見や立場を表示する発言がある。	├─┼─┼─┤	
17)　課題遂行中、相手と異なる意見や立場を表示するしぐさ、表情がある。	├─┼─┼─┤	
（7）納得させるために相手に柔軟に対応して話を進める	1．2．3．4．5	
18)　言葉による説明と視覚的な提示を行う。	├─┼─┼─┤	
19)　権威的ではなく、説明的な態度をとる。	├─┼─┼─┤	
20)　相手の理解に合わせて、言葉を変えて自分の考えを説明する。	├─┼─┼─┤	
（8）自分の主張を論理的に筋道を立てて説明する	1．2．3．4．5	
21)　課題を遂行する方法や自分の考えを明確な言葉やしぐさで説明する。	├─┼─┼─┤	場なし=ﾈｶﾞﾃｨﾌﾞ評価
22)　課題遂行中、論理的な筋道をたてて自分の主張を説明する。	├─┼─┼─┤	
23)　相手の意見を理解する発言をした上で、自分の意見を言う。	├─┼─┼─┤	
24)　相手の意見を理解する表情、しぐさをした上で、自分の意見を言う。	├─┼─┼─┤	
25)　相手の意見を理解する発言をした上で、自分が決定する。	├─┼─┼─┤	
26)　相手の意見を理解する表情、しぐさを示した上で、自分が決定する。	├─┼─┼─┤	
3．解読力：相手の伝えたい考えや気持ちを正しく読み取る	1．2．3．4．5	
（9）相手の考えを発言から正しく読み取る	1．2．3．4．5	
27)　話の最中に明らかな反応（しぐさや表情の変化）を示す。	├─┼─┼─┤	
28)　相手の発話後に発声、もしくは発話をする。	├─┼─┼─┤	相手発話なし=0回
29)　相手の発話後にその様子に対応した発声、表情または動きがある。	├─┼─┼─┤	相手発話なし=0回
（10）相手の気持ちをしぐさから正しく読み取る	1．2．3．4．5	
30)　相手が非言語的な行動を示した時、相手や道具を見る。	├─┼─┼─┤	
31)　相手の態度や非言語的な行動後に、発言する。	├─┼─┼─┤	
32)　相手の態度や非言語的な行動に対応した発声、表情または動きがある。	├─┼─┼─┤	
（11）相手の気持ちを表情から正しく読み取る	1．2．3．4．5	
33)　相手の表情の変化に気づき、発言する。	├─┼─┼─┤	
34)　相手の表情の変化に気づき、相手や道具を見る。	├─┼─┼─┤	
35)　相手の表情の変化に対応した発声、表情または動きがある。	├─┼─┼─┤	
（12）相手の感情や心理状態を敏感に感じ取る	1．2．3．4．5	
36)　相手の発話後5秒以内にほほえむ。	├─┼─┼─┤	
37)　相手が目と目でコンタクトをとろうとした時、見返す。	├─┼─┼─┤	相手ｱｲｺﾝﾀｸﾄなし=0回
38)　相手が表情や動きを変えた時、変化に気づいて対応した表情、動きがある。	├─┼─┼─┤	

【観察日　　年　　月　　日】　【ID　　】　【観察者　　】

		備考
4. 他者受容：相手を尊重して相手の意見や立場を理解する	1．2．3．4．5	
（１３）相手の意見や立場に共感する	1．2．3．4．5	
39) 相手のほほえみに対応して、自分も笑う。		相手に向けてでない=ｶｳﾝﾄなし
40) 課題遂行中、相手の努力、行動、成功などをほめる。		落ち込み場面
41) 相手が喜んでいるとき一緒に喜ぶ（笑う、手をたたく、など具体的な行動）。		+
42) 相手がうまくいかないとき、配慮した行動がみられる（しぐさ、言葉がけなど）。		－ 場面無し=ポジティブ評価【4】
43) 相手の感情や心理状態に応じて、肯定的な対応、思いやり、なだめる、言葉かけなどの行動をとる。		±
（１４）友好的な態度で相手に接する	1．2．3．4．5	
44) 相手の話しかけに対しやさしい言葉で応答する(90%以上)。		相手に声かけ
45) 相手の発言、しぐさに対してほほえむ。		
46) 相手の発言やしぐさに対してうなずく。		
47) 相手の成功や失敗に対して動作により反応する（軽くたたく、さわる、ゆらすなどのボディタッチ）。		
48) 相手の課題遂行の状況に応じて、うなずく、あるいはほほえむ。		
（１５）相手の意見をできるかぎり受け入れる	1．2．3．4．5	
49)Ⓥ 相手と同時に発話しない。		Ⓥ
50) 相手の意見に対してうなずく。		
51) 相手の意見を一部あるいは全部受け入れる（「そうしよう」などと発言する、相手の決めた行動をとる）。		
52) 相手の意見が自分と異なるときに、相手の意見を受け入れる。		場面無し=ポジティブ評価【4】
（１６）相手の意見や立場を尊重する	1．2．3．4．5	
53) 相手が何か言おうとしたら、自分が話すのをやめて待つ。		
54) 相手の邪魔になる行動をとらない。		
55) 相手に自分から選択する機会を与える。		
56) 相手の課題遂行の状況に応じて、言葉でほめる。		
5. 関係調整：周囲の人間にはたらきかけ良好な状態に調整する	1．2．3．4．5	
（１７）人間関係を第一に考えて行動する	1．2．3．4．5	
57) 相手がやりやすいように周囲の状況をうまく整える。		場無し=ﾎﾟｼﾞﾃｨﾌﾞ４ やりにくそう=1
58)Ⓥ 相手に対して、否定的な言葉や強い口調を用いない。		Ⓥ
59)Ⓥ 課題中、相手に対して批判的な発言や行動をとらない。		Ⓥ
60) うなずきなどのしぐさで相手を肯定する。		
61) 相手と目を合わせて笑う。		
62) 相手と同じものを見ながら笑う。		
63) 相手に合わせて動く。		
（１８）人間関係を良好な状態に維持するよう心がける	1．2．3．4．5	
64)Ⓥ よそみをしたり離れたりせず、相手に対して無関心な様子がない。		Ⓥ
65) 相手を言葉でほめる。（状況に対応した表現も含む）		
66) 拍手などのしぐさで相手を賞賛する。（表情＋αも含む）		
67) 課題遂行中、相手に建設的な勇気づける言葉をかける。		
68) 相手が譲歩したらありがとうという。		場無し=ﾎﾟｼﾞﾃｨﾌﾞ４
（１９）意見の対立による不和に適切に対処する	1．2．3．4．5	
69)Ⓥ 相手と意見が別れたときに、相手を批判しない。→相手と意見が対立しないように対応する。		Ⓥ 場無し=ﾎﾟｼﾞﾃｨﾌﾞ４
70) 相手と意見が別れたときに論理的に話し合う。		場無し=ﾎﾟｼﾞﾃｨﾌﾞ４
（２０）感情的な対立による不和に適切に対処する	1．2．3．4．5	
71)Ⓥ 相手との感情的対立がない。→相手と感情的に対立しないように対応する。		Ⓥ 場無し=ﾎﾟｼﾞﾃｨﾌﾞ４
72) 相手が怒りや興奮をみせたときに感情的に応じない（穏やかに対応する）。 →相手と感情的葛藤がおこったときも感情的に応じない（穏やかに対応する）。		場無し=ﾎﾟｼﾞﾃｨﾌﾞ４
6. 自己統制：自分の感情や行動をうまくコントロールする	1．2．3．4．5	
（２１）自分の衝動や欲求を抑える	1．2．3．4．5	
73) 相手の反応や行動を少なくとも5秒は待つ。		
74)Ⓥ 不自然な動きがない（体の一部をさかんに動かすなど）。→不自然な視線の動きがない。		Ⓥ
75)Ⓥ 不自然な発声がない。		Ⓥ
76)Ⓥ 不自然な発話がない。		Ⓥ
77)Ⓥ 不自然な体の動きがない。		Ⓥ
78) 課題遂行中に明らかに課題道具に向けて手を動かす。		
79) 課題に集中し、丁寧に遂行できる（いいかげんな抜き方や道具の扱いをしない）。		
80)Ⓥ 相手が遂行中、途中で手を出さない。		Ⓥ
81)Ⓥ 課題に対して乱暴な態度をとらない。		Ⓥ
（２２）自分の感情をうまくコントロールする	1．2．3．4．5	
82)Ⓥ 課題遂行中、緊張していない。（緊張度合い50%以上=1、49～11%=2、10～1%=3、0%=4）		Ⓥ
83)Ⓥ 声を荒げたり、どなったりしない。		Ⓥ
84) 課題がうまくいかなくても、自分で気持ちの切り替えをし、立ち直る。		場無し=ﾎﾟｼﾞﾃｨﾌﾞ４
（２３）善悪の判断に基づいて正しい行動を選択する	1．2．3．4．5	
85)Ⓥ 相手に対して乱暴な態度をとらない。		Ⓥ
86)Ⓥ 相手を不快にさせる態度をとらない。		Ⓥ
87)Ⓥ 人に対して悪口を言わない。		Ⓥ
88)Ⓥ 悪態をつかない（ものに対しても）。		Ⓥ
89) 決められたルールに従ってゲームを進める。		
（２４）まわりの期待に応じた振る舞いをする	1．2．3．4．5	
90) 相手と一緒に課題に応じる。		
91) 相手が成功したら残念な顔をする/自分が成功したら喜ぶ（自分の振舞い）		
92) 相手が成功したら讃える/相手が失敗したら労う。（相手への配慮）		

Appendix 02: Social Skill Inventory (Japanese)

	１から９０までの質問について、それぞれあてはまるものに○をつけてください。	非常にあてはまらない	あてはまらない	どちらとも言えない	あてはまる	非常にあてはまる
1	私が悲しんだり落ち込んだりしているのを人はあまりわかってくれません					
2	私は人一倍早口です					
3	私は落ち込むと、まわりの人までも沈んだ気分にさせてしまう傾向があります					
4	私は表情に富んだ目をしていると言われます					
5	私は他人が近くにいるとたいてい不愉快になります					
6	私はしばしば大声で笑います					
7	私は怒ったり動揺していても、そばの家族や友人に分かってもらいにくことがあります					
8	私の場合、普通感情が顔に出ません					
9	私は自分の怒りを表に出すことがほとんどありません。					
10	友達と話をするとき、私はよく相手の体に触れて自分の友情を表します					
11	私は退屈な飲み会やパーティーでも陽気にすることができます					
12	私は人から注目の的になるのが嫌いです					
13	私は感情や気分をめったに外に出しません					
14	私は友人からしゃべり過ぎると言われることがあります					
15	私は怒っても決して人を怒鳴りつけたり、叫んだりしません					
16	私は人の話の内容だけではなくその人の身振りにも注目します					
17	私ほど感受性が高く、理解力のある人はいないと思います					
18	飲み会やパーティーなどの人の集まりで、人が私に興味を持つと私はすぐに気づきます					
19	私は人の行為の原因を知ることに興味があります					
20	私は他人の人との接し方を見て、その人の性格を正確に言い当てることができます					
21	私は人の本当の感情がわかるので、人が私に感情を隠すことはできません					
22	私は初対面の人の性格を正確に判断することができます					
23	私は人と一緒にいるだけで、大きな喜びを感じます					
24	私は人と会った瞬間に、その人がうそつきかどうかすぐに見抜くことができます					
25	私は人から悩みを打ち明けられることが嫌いです					
26	私は悲しい映画を見ると泣いてしまうことがあります					
27	私は悩んでいる人を励ますために、よくその人に触れたり、肩をたたいたり、抱きしめたりすることがあります					
28	私はただ人を眺めているだけで、かなりの時間を過ごすことができます					
29	人はよく私を感受性があって理解のある人だと言います					
30	友人は腹を立てたり、不安になったときには心を静めるために私に頼ってきます					

	１から９０までの質問について、それぞれあてはまるものに〇をつけてください。	非常にあてはまらない	あてはまらない	どちらとも言えない	あてはまる	非常にあてはまる
31	私はある人が真から嫌いな場合、どんなに隠そうとしても、その人にいつも気づかれてしまいます					
32	私は真面目な顔で笑い話をすることが苦手なことがよくあります					
33	私が困っているとき、人はいつも私の顔の表情からそれを察してしまいます					
34	私は自分の感情を抑えるのがあまりうまくありません					
35	私は自分の感情を誰からもわからないように隠すことができます					
36	友人が私をいくら笑わせようとしても、私は笑いをこらえることができます					
37	私の場合、感情を抑えることが非常に難しいです					
38	私は気が動転しているときでさえも、外見を平静に保つことが非常にうまいです					
39	どんな集団に所属しても、私はいつも自分の考えや行動を集団に合わせることができます					
40	私は神経質になっているときでも、人にそれを気づかれないようにするのが非常にうまいです					
41	私は本当は楽しくなくても、楽しんでいるかのように見せかけることができます					
42	私は非常に強い喜びや悲しみを味わったとき、それを隠すことがめったにできません					
43	私は本当は嬉しくても悲しいふりができます					
44	どんなに自分の本当の感情を隠そうとしても、私はそれをいつも読まれてしまいます					
45	私はいつでもすぐに幸せそうなふりや悲しそうなふりが容易にできます					
46	私は飲み会やパーティーを開くのが好きです					
47	人に私は十分に理解してもらうには、かなりの時間がかかります					
48	私は社交的に活動するのが好きです					
49	私は大ぜいの人と接する機会のある職業を好みます					
50	私は人の集まりがあればいつも参加します					
51	初対面の人に対して、私はいつも自分から話しかけます					
52	会話を始めるときには、いつも私の方から話し始めます					
53	私は話の要点を相手にわからせるために、身振り手振りを多く交えて話すことがよくあります					
54	人と議論するときは、ほとんど私がしゃべっています。					
55	飲み会やパーティーなどの人の集まりで、私はいろいろな人と話をして楽しみます					
56	私は人とあまりつきあおうとしません					
57	私は大きな飲み会やパーティーに参加したり、見知らぬ人に会ったりするのが楽しいです					
58	私は見知らぬ人とは、話しかけられるまで話しをしません					
59	私はいつも飲み会やパーティーの中心人物になります					
60	私はどんな話題でも、何時間も続けて話すことができます					

１から９０までの質問について、それぞれあてはまるものに○をつけてください。		非常にあてはまらない	あてはまらない	どちらとも言えない	あてはまる	非常にあてはまる
61	私は批判されたり、小言を言われたりしてもめったに不愉快になりません					
62	私にとってまわりの人は最大の喜びや苦しみのよりどころです					
63	重要な討議の場で、私はその場を観察したり、分析したりするよりはむしろその討論に参加したい方です					
64	私はまわりの人々の持つ雰囲気に非常に影響を受けやすいです					
65	私はその場にふさわしい言動を自分がしているかどうか気になります					
66	私に対して、他の人びとが非常に親しく話しかけてくることがよくあります					
67	人が私の行為についてどう思おうが、そんなことは私にとって関係ありません					
68	私は自分の言ったことを人が誤解しているのではないかと心配することがよくあります					
69	私は両親から行儀作法が大事だといつも教えられてきました					
70	私は人に微笑まれたり、嫌な顔をされたりすることに強く影響されます					
71	私は批判にたいへん敏感です					
72	私が人に好かれていることは非常に重要なことです					
73	私は人から見られていると思うと、とてもあがってしまいます					
74	私は自分が人にどんな印象を与えているのか気になることがよくあります					
75	私はまわりの人が私のことをどのように考えているのか気になることがよくあります					
76	私は若い人や年をとった人、お金持ちや貧乏人などのあらゆるタイプの人とうまくやっていくことができます					
77	私は友人グループの中で、代表者になることがよくあります					
78	私は非常に個人的な（自分のことについて）話しをしているとき、相手を見ることができません					
79	私は用意されたスピーチをこなすのはうまくありません					
80	たくさんの聴衆の前で話すことは、私にとって非常に難しいです					
81	人の中にいると、私は話すことを思いつくのに骨が折れます					
82	私はグループで話し合いをするとき、いつもとてもうまく話し合いをリードします					
83	私は自分と似ていない人々と一緒にいると、不愉快になることがよくあります					
84	私は飲み会やパーティーなどで、雰囲気を盛り上げるのは得意ではありません					
85	私は偉い人達が参加している飲み会やパーティーになかなかなじめません					
86	私は生い立ちの違う人と一緒にいると不愉快になることがあります					
87	私は見知らぬ人と話し始めたとき、その場にふさわしくないことを言ってしまうことがあります					
88	私はグループのリーダーに選ばれることがよくあります					
89	私はやっかいな立場に立たされていることがよくあります					
90	私はどんな状況にも、とても容易に順応できます					

Appendix 03: ENDCORE's (Japanese)

	１から２４までの質問について、あてはまるものにそれぞれ〇をつけてください。	かなり苦手	苦手	やや苦手	ふつう	やや得意	得意	かなり得意
1	自分の衝動や欲求を抑える							
2	自分の感情をうまくコントロールする							
3	善悪の判断に基づいて正しい行動を選択する							
4	まわりの期待に応じた振る舞いをする							
5	自分の考えを言葉でうまく表現する							
6	自分の気持ちをしぐさでうまく表現する							
7	自分の気持ちを表情でうまく表現する							
8	自分の感情や心理状態を正しく察してもらう							
9	相手の考えを発言から正しく読み取る							
10	相手の気持ちをしぐさから正しく読み取る							
11	相手の気持ちを表情から正しく読み取る							
12	相手の感情や心理状態を敏感に感じ取る							
13	会話の主導権を握って話を進める							
14	まわりとは関係なく自分の意見や立場を明らかにする							
15	納得させるために相手に柔軟に対応して話を進める							
16	自分の主張を論理的に筋道を立てて説明する							
17	相手の意見や立場に共感する							
18	友好的な態度で相手に接する							
19	相手の意見をできるかぎり受け入れる							
20	相手の意見や立場を尊重する							
21	人間関係を第一に考えて行動する							
22	人間関係を良好な状態に維持するように心がける							
23	意見の対立による不和に適切に対処する							
24	感情的な対立による不和に適切に対処する							

Appendix 04: Autism-Spectrum Quotient (Japanese)

	(1) そうである	(2) どちらかといえば そうである	(3) どちらかといえば そうではない（ちがう）	(4) そうではない（ちがう）
1．何かをするときには，一人でするよりも他の人といっしょにする方が好きだ.	1	2	3	4
2．同じやりかたを何度もくりかえし用いることが好きだ.	1	2	3	4
3．何かを想像するとき，映像（イメージ）を簡単に思い浮かべることができる.	1	2	3	4
4．ほかのことがぜんぜん気にならなくなる（目に入らなくなる）くらい，何かに没頭してしまうことがよくある.	1	2	3	4
5．他の人が気がつかないような小さい物音に気がつくことがよくある.	1	2	3	4
6．車のナンバーや時刻表の数字などの一連の数字や，特に意味のない情報に注目する（こだわる）ことがよくある.	1	2	3	4
7．自分ではていねいに話したつもりでも，話し方が失礼だと周囲の人から言われることがよくある.	1	2	3	4
8．小説などの物語を読んでいるとき，登場人物がどのような人か（外見など）について簡単にイメージすることができる.	1	2	3	4
9．日付についてのこだわりがある.	1	2	3	4
10．パーティーや会合などで，いろいろな人の会話についていくことが簡単にできる.	1	2	3	4
11．自分がおかれている社会的な状況（自分の立場）がすぐにわかる.	1	2	3	4
12．ほかの人は気がつかないような細かいことに，すぐに気づくことが多い.	1	2	3	4
13．パーティーなどよりも，図書館に行く方が好きだ.	1	2	3	4
14．作り話には，すぐに気がつく（すぐわかる）.	1	2	3	4
15．モノよりも人間の方に魅力を感じる.	1	2	3	4
16．それをすることができないとひどく混乱して（パニックになって）しまうほど，何かに強い興味を持つことがある.	1	2	3	4
17．他の人と，雑談などのような社交的な会話を楽しむことができる.	1	2	3	4

	(1)そうである	(2)どちらかといえば そうである	(3)どちらかといえば そうではない（ちがう）	(4)そうではない（ちがう）
18．自分が話をしているときには，なかなか他の人に横から口をはさませない．	1	2	3	4
19．数字に対するこだわりがある．	1	2	3	4
20．小説などを読んだり，テレビでドラマなどを観ているとき，登場人物の意図をよく理解できないことがある．	1	2	3	4
21．小説のようなフィクションを読むのは，あまり好きではない．	1	2	3	4
22．新しい友人を作ることは，むずかしい．	1	2	3	4
23．いつでも，ものごとの中に何らかのパターン（型や決まりなど）のようなものに気づく．	1	2	3	4
24．博物館に行くよりも，劇場に行く方が好きだ．	1	2	3	4
25．自分の日課が妨害されても，混乱することはない．	1	2	3	4
26．会話をどのように進めたらいいのか，わからなくなってしまうことがよくある．	1	2	3	4
27．誰かと話しをしているときに，相手の話の‘言外の意味’を理解することは容易である．	1	2	3	4
28．細部よりも全体像に注意が向くことが多い．	1	2	3	4
29．電話番号をおぼえるのは苦手だ．	1	2	3	4
30．状況（部屋の様子やものなど）や人間の外見（服装や髪型）などが，いつもとちょっと違っているくらいでは，すぐには気がつかないことが多い．	1	2	3	4
31．自分の話を聞いている相手が退屈しているときには，どのように話をすればいいかわかっている．	1	2	3	4
32．同時に2つ以上のことをするのは，かんたんである．	1	2	3	4
33．電話で話をしているとき，自分が話をするタイミングがわからないことがある．	1	2	3	4
34．自分から進んで何かをすることは楽しい．	1	2	3	4

	(1)そうである	(2)どちらかといえば そうである	(3)どちらかといえば そうではない（ちがう）	(4)そうではない（ちがう）
35．冗談がわからないことがよくある.	1	2	3	4
36．相手の顔を見れば，その人が考えていることや感じていることがわかる.	1	2	3	4
37．じゃまが入って何かを中断されても，すぐにそれまでやっていたことに戻ることができる.	1	2	3	4
38．人と雑談のような社交的な会話をすることが得意だ.	1	2	3	4
39．同じことを何度も繰り返していると，周囲の人からよく言われる.	1	2	3	4
40．子どものころ，友達といっしょに，よく‘○○ごっこ’（ごっこ遊び）をして遊んでいた.	1	2	3	4
41．特定の種類のものについての（車について，鳥について，植物についてのような）情報を集めることが好きだ.	1	2	3	4
42．あること（もの）を，他の人がどのように感じるかを想像するのは苦手だ.	1	2	3	4
43．自分がすることはどんなことでも慎重に計画するのが好きだ.	1	2	3	4
44．社交的な場面（機会）は楽しい.	1	2	3	4
45．他の人の考え（意図）を理解することは苦手だ.	1	2	3	4
46．新しい場面（状況）に不安を感じる.	1	2	3	4
47．初対面の人と会うことは楽しい.	1	2	3	4
48．社交的である.	1	2	3	4
49．人の誕生日をおぼえるのは苦手だ.	1	2	3	4
50．子どもと‘○○ごっこ’をして遊ぶのがとても得意だ.	1	2	3	4

Appendix 05: Instruction to Participation

研究についての説明書

現在、中国では、経済の発展で社会の形が急速に変化しています。この過程の中で、若者たちの社会能力の不足が社会問題となりました。また、社会能力は性格、生活習慣などに影響を及ぼすと言われています。関係性の希薄化といった社会における対人関係の難しさが指摘されており、対人関係を円滑に進めるための技能や基礎能力、すなわち社会能力の発達を育む環境づくりが求められています。

社会能力の発達をとらえる評価法を支援に活用することで、社会能力の獲得に困難のある子どもと成人に対する早期支援を展開できます。しかし中国では社会能力を総合的、客観的に評価できる指標はほとんど見当たらない状況です。そこで、日常的な人とのかかわりの様子を明らかにすることを目的として、実験および質問票調査を実施いたします。

本研究は、大学の教員に，研究の目的、意義、方法，個人情報保護について説明し，承認を得た上で、参加者をポスターにより募集します。本研究の課題は，スティッキーというゲームです。参加者は二人組になってゲームを行います。ゲーム実施場面は，ビデオに撮影します。課題終了後は 3 種類のアンケートにお答えいただきます。個人情報として顔が撮影されますが、名前や所属などの情報も含め，外部に出ることはありません。また、このデータは，研究期間終了時（平成 26 年 3 月 31 日）に消去および廃棄します。

この研究の成果は、実践で専門職が活用できる社会能力の発達をとらえる評価法の開発に加え、支援へ活用することにより社会能力の獲得に困難のある子どもと成人に対する早期支援の大きな一助となり、円滑な対人関係を育む社会環境づくりに貢献するものです。

この研究は筑波大学人間科学研究科の医の倫理委員会の承認を得て、協力者の皆様に不利益がないよう万全の注意を払って行われています。調査への参加は本人の自由意思によるものであり、調査協力に同意しない場合でも不利益を受けることはありません。またこの同意書を提出した後も、不利益を得ず調査への参加を随時撤回する事ができます。

実験記録データは個人が特定されることがないよう匿名化し、得られた情報やデータは施錠保管を行い、この研究の目的以外には使用しません。質問票は自記式質問票とし、回答内容を第三者に知られることがないよう回収には個別の封筒を用意しました。質問票の回答結果は個人が特定されることがないよう匿名化し、得られた情報やデータは施錠保管を行い、この研究の目的以外には使用しません。

研究の結果は論文や学会発表という形で公表しますが、調査に協力いただく方の所属や個人の情報が特定できないよう十分に配慮し、外部に出ることはありません。また、倫理委員会の承認を得た後収集するデータのみを本研究で使用します。

説明者　所属筑波大学医学医療系　教授
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メール　anmet@md.tsukuba.ac.jp

Appendix 06: Agreement to the research

同　意　書

筑波大学医学医療系長　殿

私は、「中国の大学生における社会能力の行動学的指標確立に関する研究」について、日常的な人とのかかわりの様子を明らかにすることを目的とし、実験及び質問紙調査を実施することで、円滑な社会環境づくりに貢献するものであることについて十分な説明を受けました。また、本研究への協力に同意しなくても不利益を受けないことも確認した上で、調査への協力を承諾します。ただし、この承諾書にサインしたあとも、不利益を受けず随時撤回できるものであることを確認します。

平成＿＿＿年＿＿＿月＿＿＿日

氏　名＿＿＿＿＿＿＿＿＿＿印
（自筆署名または記名押印）

「中国の大学生における社会能力の行動学的指標確立に関する研究」において、書面および口頭により、平成＿＿＿年＿＿＿月＿＿＿日に説明を行い、上記のように承諾を得ました。

説明者　　所　属＿＿＿＿＿＿＿＿＿＿
氏　名＿＿＿＿＿＿＿＿＿＿印

Appendix 07: Withdraw Agreement to the research

同意撤回書

筑波大学医学医療系長　殿

私は「中国の大学生における社会能力の行動学的指標確立に関する研究」への参加に同意し、同意書に署名しましたが、その同意を撤回いたします。

平成＿＿年＿＿月＿＿日

氏　名＿＿＿＿＿＿＿＿印
(自筆署名または記名押印)

「中国の大学生における社会能力の行動学的指標確立に関する研究」の参加の同意撤回を確認いたしました。

平成＿＿年＿＿月＿＿日

確認者　　所　属＿＿＿＿＿＿＿＿
氏　名＿＿＿＿＿＿＿＿印

Appendix 02 – Social Skill Inventory (Chinese)

题号	请在阅读以下问题后，根据自身的实际情况作答	非常不符合	不符合	不好说	符合	非常符合
1	别人发觉不到我的悲伤和失落					
2	我说话比别人快了一倍					
3	当我低沉失落时，会影响到周围的人让他们也感到这种低沉失落的心情					
4	别人说我表情很丰富，眼睛很有神					
5	和别人离得很近会让我感到不太愉快					
6	我常常大声地笑出来					
7	当我生气或者不安定的时候，身边的家人和朋友很难察觉到					
8	就个人而言，我平时不在表情上表露自己的情感					
9	我几乎不表现出自己发怒的情感					
10	和朋友交谈时，我经常通过接触朋友的身体来表现自己的友情					
11	即使是很无聊的聚餐或者聚会，我也能很热情地参与					
12	我不喜欢成为别人注目的焦点					
13	我很少把自己的情感和心情表现出来					
14	我被朋友指出过，自己的说话过多了					
15	即使发火生气了，我也不会朝别人大喊大叫					
16	我不仅会注意别人说话的内容，同时也会注意别人说话时的身体动作					
17	我觉得其他人不会像我这样敏感细腻又能理解他人和事物					
18	在聚餐和聚会这种很多人一起的场合时，如果别人关注到我，我会马上就注意到					
19	我对人做出某些行为的原因感兴趣					
20	通过观察一个人对待他人的方式，我能正确地说出这个人的性格					
21	因为我能察觉到别人的真实情感，所以别人没法对我隐藏他们的情感					
22	我能正确地判断第一次见面的人的性格					
23	只要和别人在一起，我就会感到很高兴					
24	在和别人面对面的时候，我就能看穿这个人是不是在撒谎					
25	我讨厌别人找我诉说或者解决他们的烦恼					
26	观赏悲剧电影的时候，我会流眼泪					
27	在鼓励那些正在烦恼的人的时候，我经常会拍拍他们的肩膀，或者拥抱他们					
28	我能只是远看着人群，就能度过很长的时间					
29	别人常说我是一个很敏感细腻，又很能理解他人和事物的人					
30	朋友在生气或者不安，想冷静安心的时候，会来拜托我帮忙					
31	如果我是发在内心的讨厌一个人，无论我想怎么隐藏，都会被那个人察觉到					
32	因为我习惯一本正经的面孔，所以经常会有讲不好笑话的情况					
33	当我感到困惑的时候，别人总能从我的表情上察觉到					
34	我很少能比较好地控制自己的情感					
35	我总是将自己的情感隐藏起来，不让鄙人发现					
36	无论朋友怎么逗我发笑，我都能忍住不笑					
37	我自己觉得控制自己的情感是一件很难的事					
38	即使我的内心或者心情产生波动，我也能很好地保持外表的平静					
39	无论身处于哪一个团体，我总是能调整自己的想法和行动使自己与团体保持一致					
40	即使我自己变得很敏感或者神经质的时候，我也能很好地控制不让别人注意到					
41	即使我不是真的感到快乐，我也会让自己看起来很快乐					
42	当我感受到很强烈的欢喜或者悲伤的时候，我几乎不能将这些隐藏起来					

43	即使感到很高兴，我也能装出自己很悲伤的样子					
44	无论我怎样想办法去隐藏起自己真是的情感，还是会被别人看出来					
45	我随时都能很容易地摆出一副幸福或者悲伤的样子					
46	我喜欢举办聚餐或者聚会					
47	让别人能理解我的这一过程会耗费很多的时间					
48	我喜欢社交一类的活动					
49	我喜欢那种能和很多人接触打交道的工作					
50	当有那种人们聚集在一起的活动时，我总是会去参加					
51	当和别人第一次见面的时候，我总是主动和他们打招呼					
52	当和别人交谈的时候，我总是会话的发起者					
53	为了让别人明白交谈的重点，我在说话时经常会配合上自己的肢体动作					
54	在和别人讨论的时候，几乎都是我在说话					
55	在聚餐和聚会这类人们在一起的活动中，去同各种各样的人交流，让我感到很快乐					
56	我不怎么打算去和别人打交道					
57	我很高兴能去参加聚餐或者聚会之类的活动，去认识以前不认识的人					
58	除非被别人搭话，我不会去和不认识的人说话					
59	我总是聚餐或者聚会的中心人物					
60	无论什么话题，交谈多少时间，我都能把话题继续说下去					
61	即使被别人批评或者被别人在背后说坏话，我也很少感到不愉快					
62	对我而言，周围的人是让我高兴或者悲伤的主要原因					
63	在讨论重要议题的时候，相比观察和分析整个讨论的情况，我更希望参加到讨论中					
64	我很容易受到周围的人的气氛影响					
65	我很在意自己是否做出了符合场合的言行					
66	别人经常很亲热地和我搭话					
67	我对别人如何看待我的行事方式毫不在意					
68	我经常担心别人是不是误解了我所说的话					
69	我总是被父母教导说，一个人的待人处事方式是很重要的					
70	对我而言，别人对我微笑或者摆出讨厌的神情有这很强的影响					
71	我对自己受到的评判很敏感					
72	我觉得被别人喜欢是很重要的					
73	当觉得自己被别人看着的时候，我会感到有点激动					
74	我经常在意自己给别人留下了怎样的印象					
75	我经常在意周围的人是如何看待我的					
76	无论是年轻人或老人，有钱人或穷人，任何类型的人，我都能很好地和他们相处					
77	在我的朋友圈中，我经常是代表人物					
78	在我很专注于自己的说话时，我不能注意到和自己谈话的对方					
79	我不擅长用已经准备好的演讲内容进行演讲					
80	对我而言，在很多人面前说话时很困难的事					
81	在很多人当中交谈时，尽管我想起了自己要说的内容要说出来却感到很困难					
82	在很多人一起交谈时，我总是主导着谈话能够很顺利地进行下去					
83	在和自己性格不一样的人一起时，我经常感到不愉快					
84	在聚餐或者聚会时，我不擅长活跃当场的气氛					
85	对那些有着出色优秀的人物参加的聚餐或者聚会，我怎么也习惯不了					
86	和那些与自己成长经历不一样的人在一起时，会让我感到不愉快					
87	和自己不认识的人开始说话时，我总是会说出不合时宜的话					
88	我经常被选为团体的领导者					
89	我经常被置于麻烦的立场当中					
90	无论处在怎样的状况，我都能很容易地去适应					

Appendix 03 – ENDCORE's (Chinese)

题号	请在阅读以下问题后，根据自身实际情况作答	非常困难	困难	比较困难	一般	比较容易	容易	非常容易
1	我能控制自己的冲动和欲求							
2	我能很好地控制自己的情感							
3	我总是在判断善恶的基础上采取正确的行动							
4	我的言行总是在回应身边他人的期待而产生的							
5	我能用言语很好地表述自己的想法							
6	我能用举止和动作很好地表现自己的心情							
7	我能用表情很好地表现自己的心情							
8	我能让别人正确地察觉到我的情感或者心理状态							
9	我能正确地从别人的言语中听懂别人的想法							
10	我能正确地从别人的举止和动作上明白别人的心情							
11	我能正确地从别人的表情上看懂别人的心情							
12	我能敏感地察觉到别人的情感和心理状态							
13	我能掌握着会话的主导权，使会话进行下去							
14	在周围的任何情况下，我都能明确地表述自己的意见和立场							
15	为了能让别人接受，我能很柔和地将对话进行下去							
16	我能很有逻辑和道理地说明自己的主张							
17	我对别人的意见和立场能感同身受							
18	我能以友好的态度去对待别人							
19	我会尽可能地接受别人的意见							
20	我尊重别人的意见和立场							
21	采取行动时，我会优先考虑如何处理同他人的关系							
22	我会尽心地想方设法去维持同他人的良好关系							
23	当同别人的意见不同而产生不快时，我能适当地处理							
24	当同别人的情感有对立而产生不快时，我能适当的处理							

Appendix 4 - Autism-Spectrum Quotient (Chinese)

题号	请在阅读以下问题后，根据自身实际情况作答	完全同意	基本同意	基本不同意	完全不同意
1	相比于同别人合作，我更喜欢一个人独立去做某件事				
2	我喜欢重复做某件同样的事				
3	如果我要想象某个事物的话，我很容易就能在脑中产生这个事物的印象				
4	我经常由于过于专注于某个事物而没能注意到其他的事物				
5	我经常注意到其他人没注意到的细小的声响				
6	我经常注意到车牌号或其他的一连串数字之类的信息				
7	我经常被别人指出自己的说话方式显得不太礼貌，但我自己并不这样认为				
8	当读到一个故事的时候，我很容易想象勾勒出故事中人物的性格				
9	我对日期很在意				
10	在一个社交群体中，我能很容易地加入不同人群的会话与他们交谈				
11	我很容易找到自己的社会立场				
12	我倾向于注意到别人注意不到的细节				
13	相比参加聚会，我更愿意去图书馆				
14	我很容易就明白一个故事是否是编造的				
15	相比事物，我觉得人其实更有意思				
16	有些事物因为我自己不能处理好而让我生气，但也让我对这些事物更有兴趣				
17	我喜欢和别人聊天闲谈				
18	当我在说话的时候，别人不容易插嘴进来				
19	我对数字很在意				
20	读到一个故事的时候，我很难去理解懂得人物的意图				
21	我不是特别喜欢读小说				
22	我觉得交新朋友是一件很难的事				
23	我总是去关注事物的类型				
24	相比去博物馆，我更愿意去剧院				
25	当我的日常计划被打乱时，我也不会生气				
26	我经常觉得自己不知道该如何将一个谈话持续下去				
27	我很容易就能理解到别人的言外之意				
28	我总是着眼于事物的整体，而不是事物的某些小细节				
29	我不擅长于记住电话号码				
30	我不怎么注意到一些细小的改变，无论是某个情况还是某个人物的表现				
31	当别人觉得听我说话很无聊时，我知道该怎么办				
32	我觉得同时处理多个事情是容易的				
33	在电话里交谈时，我不知道自己什么时候说话才合适				
34	我喜欢自然而然地做某一个件事				
35	我经常是最后一个听懂笑话的人				
36	我觉得只从人们的表情去理解他们的想法或感受是容易的				
37	受到打扰，我也能很快地回到自己正在处理的事情中				
38	我是一个擅长聊天闲谈的人				
39	我经常被别人指出，自己总是在做某一件同样的事				
40	当我是还是个小孩的时候，我喜欢和别个的小孩玩扮演某些角色的游戏				
41	我喜欢收集事物类型的信息，比如汽车的型号，鸟和植物的种类等				
42	我发觉自己很难去想象别人对某个事物的感觉				

43	对自己参加的活动，我喜欢仔细地去计划				
44	我喜欢社交的场合				
45	我觉得自己很难去理看懂别人的意图				
46	新的局面或者环境会让我感到焦虑				
47	我喜欢去认识新的人				
48	我是一个处事圆滑的人				
49	我不太擅长记住别人的生日				
50	我觉得和小孩子们玩角色扮演之类的游戏是一件很容易的事				

Appendix 05: Instruction to participants (Chinese)

研 究 说 明 书

随着中国经济发展和社会转型，当前年轻人社会交往能力的缺失和不足已经成为社会课题之一，而社会交往能力又对年轻人的性格和生活习惯等造成深刻的影响。如今，在社会人群日常相互交流减少，部分年轻人难于待人处事和与人交流存在一些困难的背景下，创建一个能有利于培养年轻人的社会交往能力健康发展的社会坏境显得尤为重要。

目前世界范围内的研究中，已经开展着以小孩和成人为目标人群，通过利用行为观测评价的社会能力发展量表进行测定，从而对有发展障碍的人群进行早期干预支援的研究。但是，在目前中国国内，关于通过行为观测而进行社会能力评价的量表开发还存在着各种不足，因此本次研究着眼于观测年轻人的交流行为，通过交流实验和调查问卷进行评价和研究。在本次研究时,会首先和实施地点所在的大学教师对研究的目的、意义、方法以及参加者个人信息保护进行详细的说明后进行参加者募集。在实施中，参加者会按两人为一组进行游戏，并且将对此游戏的场面进行拍摄。在游戏结束后，继续填写三种调查问卷以便进行后面的评价。虽然在实施中会拍摄到参加者的相貌，但这些绝不会在研究之外泄露，并且所有数据都会在研究结束时（2014 年 3 月 31 日）完全删除。

本次研究的成果，可以用于专门的研究人员对年轻人的社会交往能力进行评价开发，对社会交往能力不足和障碍的年轻人进行干预支援，为创建有利于培养年轻人的社会交往能力健康发展的社会坏境作出贡献。

本次研究得到了筑波大学人类综合研究科医学医疗系研究伦理委员会的实施承认，在实施当中也会做到认真负责，对参加者不产生任何利益损害。是否同意参与，完全是出于参加者本人的意愿，并且不会对参加者的利益有任何影响。另外，即使已经同意参与，参加者也有权利在任何时候退出本次研究。

实验记录的数据完全采用匿名化，所有资料和数据都会严格保管，不会泄漏或是用于本次研究以外的其它任何研究。研究中采用的调查问卷会以专门的信封予以保存，其内容不会让研究者以外的人得知。

本次研究的结果会以论文或是学会发表的形式公开，其中不会涉及和向外泄漏任何与参加者有关的个人信息。另外，本次研究中只会使用在筑波大学医学医疗系伦理委员会许可之后取得的数据。

说明人员所属筑波大学医学医疗系

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Appendix 06: Agreement to the research (Chinese)

同 意 书

筑波大学医学医疗系长

关于本次四川省大学生社会能力的行动学指标确立的研究，我已经充分了解了实验的目的是为了研究平常交流时成年人大学生的行为特征，实验的过程步骤以及所用调查问卷的内容，也知道本次实验是为了更好地促进人们的社会交流。

在明白自己不会因本次实验受到任何利益损害后，自愿参与本次实验。同时，在签名同意参与后，我有权在任何时候撤回自己参与实验的决定，并且不会因为撤回决定而受到利益损失。

年　　月　　日

姓名＿＿＿＿＿＿＿＿＿＿＿＿＿＿印

(本人签名或是私人印章)

关于本次四川省大学生社会能力的行动学指标确立的研究，在　年　月　日，经过口头以及书面说明，得到了该参加者的参与承诺。

说明人员　　所属＿＿＿＿＿＿＿＿

姓名＿＿＿＿＿＿＿＿

Appendix 07: Withdraw Agreement to the research (Chinese)

同意撤回书

筑波大学医学医疗系长

关于本次四川省大学生社会能力的行动学指标确立的研究，虽然之前我决定自愿参与并已在参与同意书上签名，但我现在决定撤回之前同意参与的决定。

年　　月　　日

姓名＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿印
(本人签名或是私人印章)

关于该参加者之前所签名的，自愿参与本次四川省大学生社会能力的行动学指标确立的研究的决定，已确认该参加者在此收回。

说明人员　　所属＿＿＿＿＿＿＿＿＿＿
姓名＿＿＿＿＿＿＿＿＿＿

別記様式第2　（第10条関係）

課題番号第　23-278　号
平成　23 年　9 月　30 日

研 究 倫 理 審 査 結 果 通 知 書

申請者

安梅勅江　　殿

人間総合科学研究科長
五十殿　利治

平成23年8月31日　付けで申請のあった研究倫理について、審査の結果、下記のとおり判定したので通知します。

記

1　課題名　　「中国人の成人における社会能力の行動学的指標確立に関する研究」

2 判　定

☑　承　認
☐　不承認
☐　非該当

3 理　由

様式4(第12条関係)

医の倫理委員会審査結果通知書

通知番号　　第　23-278 号
(変更)
平成　24 年　12 月　21 日

研究責任者
安梅　勅江　　殿

医学医療系長
吉川　裕之

課　題　名　　「中国四川省の大学生における社会能力の行動学的指標確立に関する研究」

平成24年10月16日付けで申請のあった上記課題に係る【研究計画書・(研究計画変更書)】を審査した結果、下記のとおり判定したので通知します。

記

判定	(承　認)	条件付承認	変更の勧告
	不承認	中　止	非該当
理由等			

＊前回承認日・・・平成23年9月30日、承認No.23-278